

APPARATUS INDEX

DESIG	LOCATION		
	FS	APP FIG.	EQPT
COMPONENT ASSEMBLIES			
DETECTOR - SEE NOTE 303	3A5	5	CA4
H0-4 H5-9	2A7 2A7	3 3	CA1 CA2
INL	1D5, 4G5	2, 8	
INR	1A5, 4C5	2, 8	
PD	5B2	9	CA5
SMA SMB	2D7 2F7	3 3	CA3 CA3
SON	3F8	7	
T0-4 T5-9	2B7 2B7	3 3	CA1 CA2
TH0-4 TH5-9	2D1 2A1	3 3	CA1 CA2
U0-4 U5-9	2C7 2C7	3 3	CA1 CA2

DESIG	LOCATION		
	FS	APP FIG.	EQPT
RELAYS			
RP	3E4	4	
TP	3E4	4	

CAPACITORS			
C1	3C5, 5B1	5, 9	CA4, CA5
C2	3B5, 5B2	5, 9	CA4, CA5
C3	3B6	5	CA4
C4	3C6	5	CA4
C5	3E2	4	
C6	3E2	4	

DESIG	LOCATION		
	FS	APP FIG.	EQPT
DIODES			
CR1	3G2, 5B3	4, 9	CA5
CR2	3F2	4	
INL1-10 INL1-14	1E5-G5 4F5-H5	2 8	
INR1-10 INR1-14	1B5-G5 4A5-D5	2 8	

EXTERNAL RESISTORS			
AH0,1,2,4,7 ASMO-10 ATO,1,2,4,7 ATH0,1,2,4,7 AU0,1,2,4,7	3B3	5	CA4

ISOLATORS			
LIC1,2	4H5	8	
RIC1,2	4D5	8	

DESIG	LOCATION		
	FS	APP FIG.	EQPT
LAMPS			
L	3D4	4	
NT-	1B2, 1G2, 3D9	1, 6	
OR OT	3G8 3G8	7 7	
T-	1B2, 1F2, 3E9	1, 6	
U-	1B1, 1F1, 3E9	1, 6	

PRINTED WIRING BOARDS			
CPA1 CPA2 CPA3	6C4 7C4 7C8, 8C1, 8C4, 8C8	11	
CPA4 CPA5 CPA6	7C1 5B8 9B2	10 11	
PS	9B7	12	

DESIG	LOCATION		
	FS	APP FIG.	EQPT
RESISTORS			
A AR AT	2D6 3G8 3G8	3 7 7	
H0A-4A H0B-4B H5A-9A H5B-9B	2A7	3	CA1 CA1 CA2 CA2
O1 OR OT	2D7 3G9 3G9	3 7 7	CA3
R1	3C5, 5B2	5, 9	CA4, CA5
R2	3B5, 5B2	5, 9	CA4, CA5
R3	3A4, 5B1	5, 9	CA4, CA5
R4 R5 R6	3A6 3B6 3D3	5 5 4	CA4 CA4
S-	1B1, 1G1, 3D8	1, 6	
SM0 SM1-3 SM4-6 SM7-9 SM10	2D7 2E7 2F7 2G7 2H7	3	CA3

DESIG	LOCATION		
	FS	APP FIG.	EQPT
RESISTORS (CONT)			
TOA-4A TOB-4B T5A-9A T5B-9B	2B7	3	CA1 CA1 CA2 CA2
TH0A-4A TH0B-4B TH5A-9A TH5B-9B	2D1-G1 2D1-G1 2A1-D1 2A1-D1	3	CA1 CA1 CA2 CA2
U0A-4A U0B-4B U5A-9A U5B-9B	2D7 2D7 2C7 2C7	3	CA1 CA1 CA2 CA2

TRANSISTORS			
Q1	3A5, 5B1	5, 9	CA4, CA5
Q2	3B5	5	CA4

A

BCD

—

E

—

F

1

G

—

H

E-7421 (NO-71)

C

1

2

3

4

10

1

2

1



HW

H

NUMBER NETWORK AND IDENTIFIER CIRCUIT

②

SD-32374-01-A3

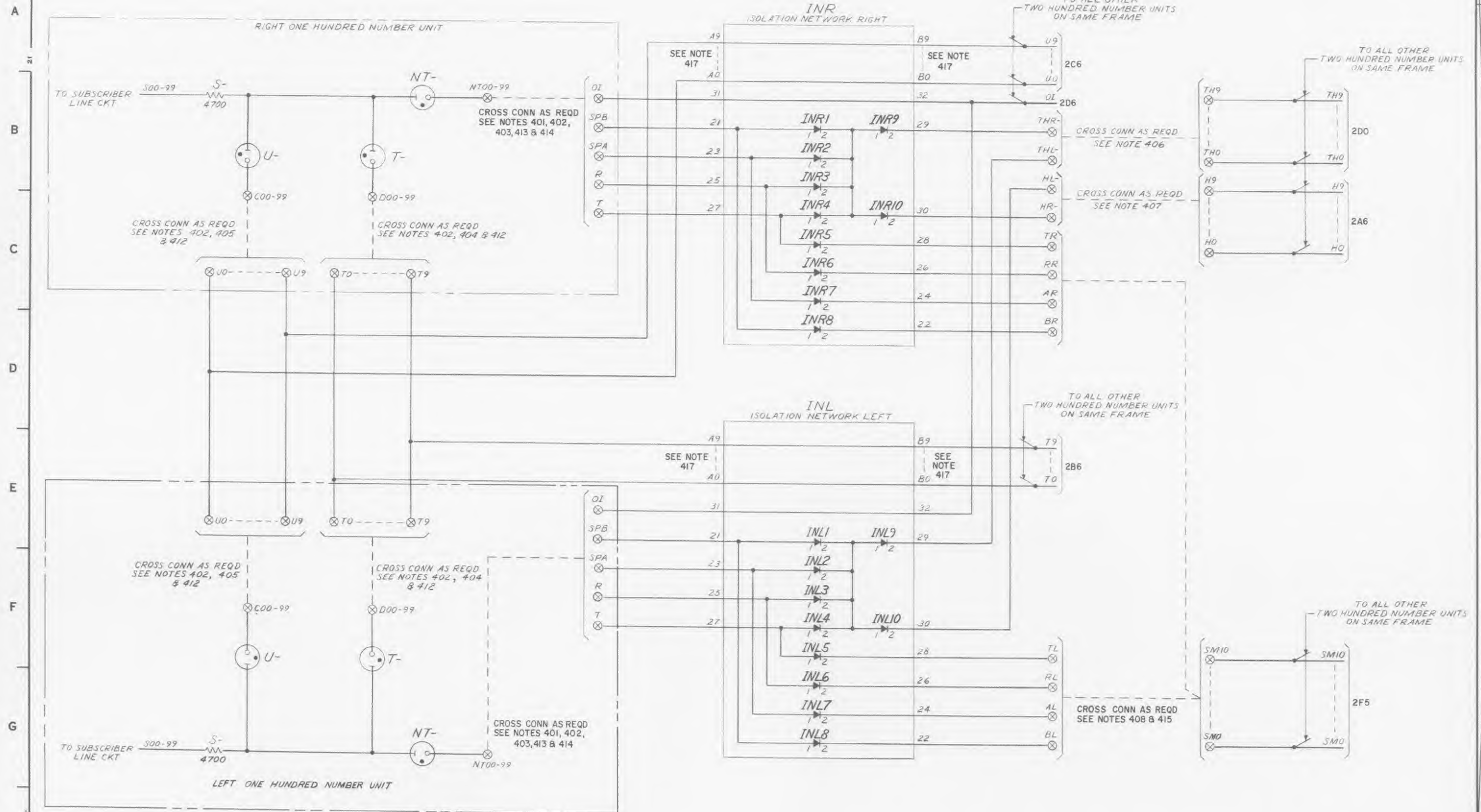
AT&T BELL LABORATORIES

DWG SIZE
6S

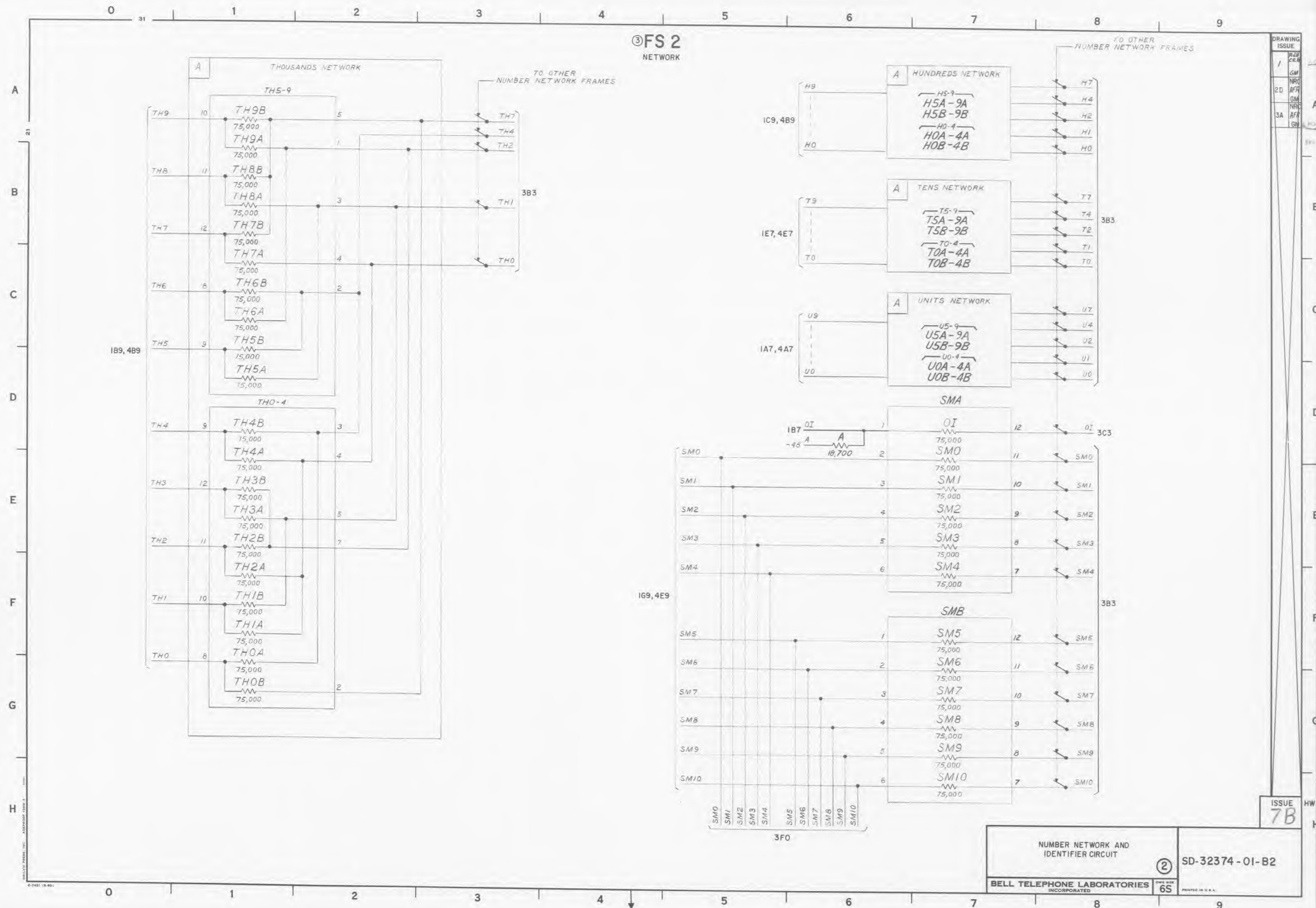
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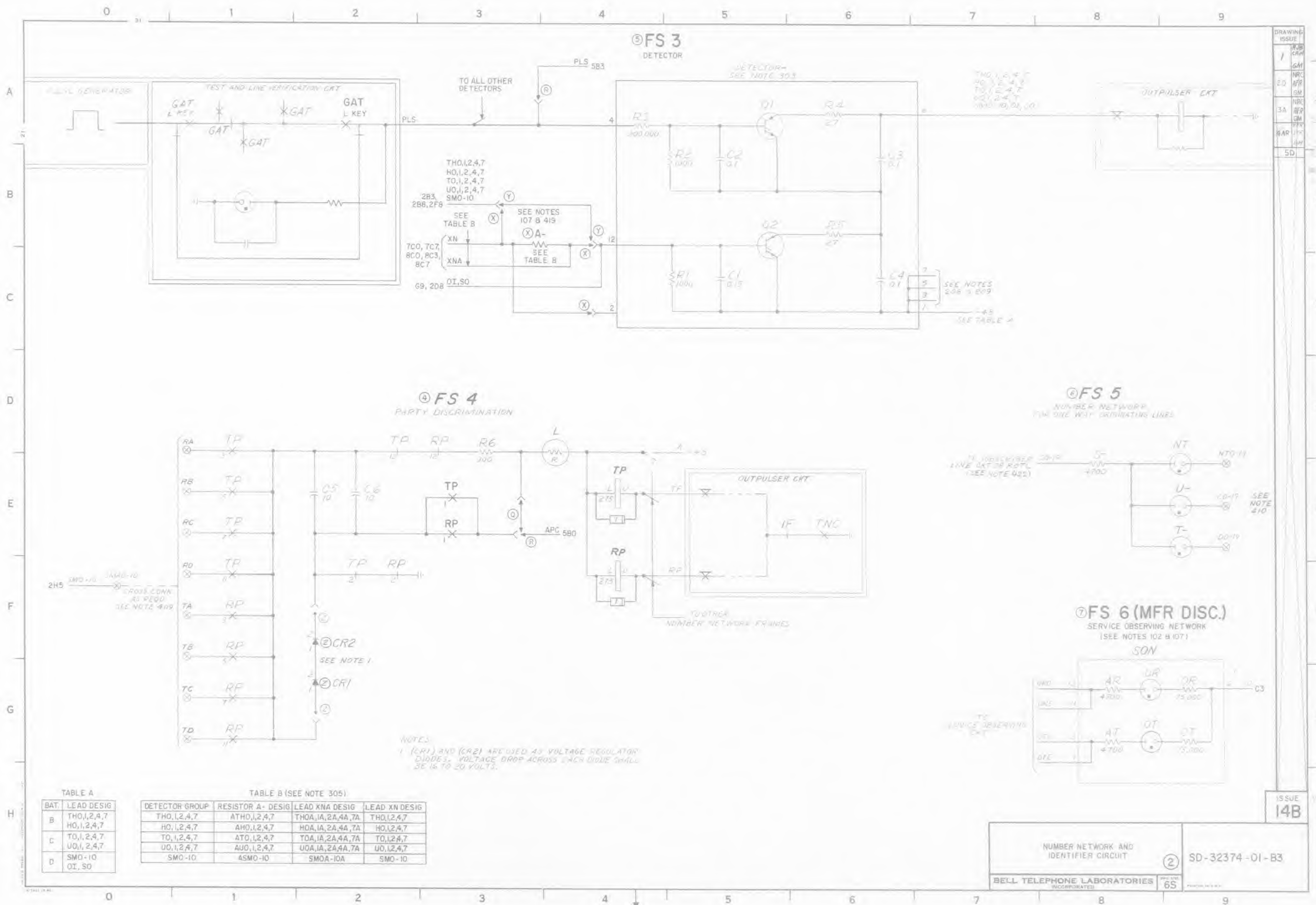
OPTION INDEX

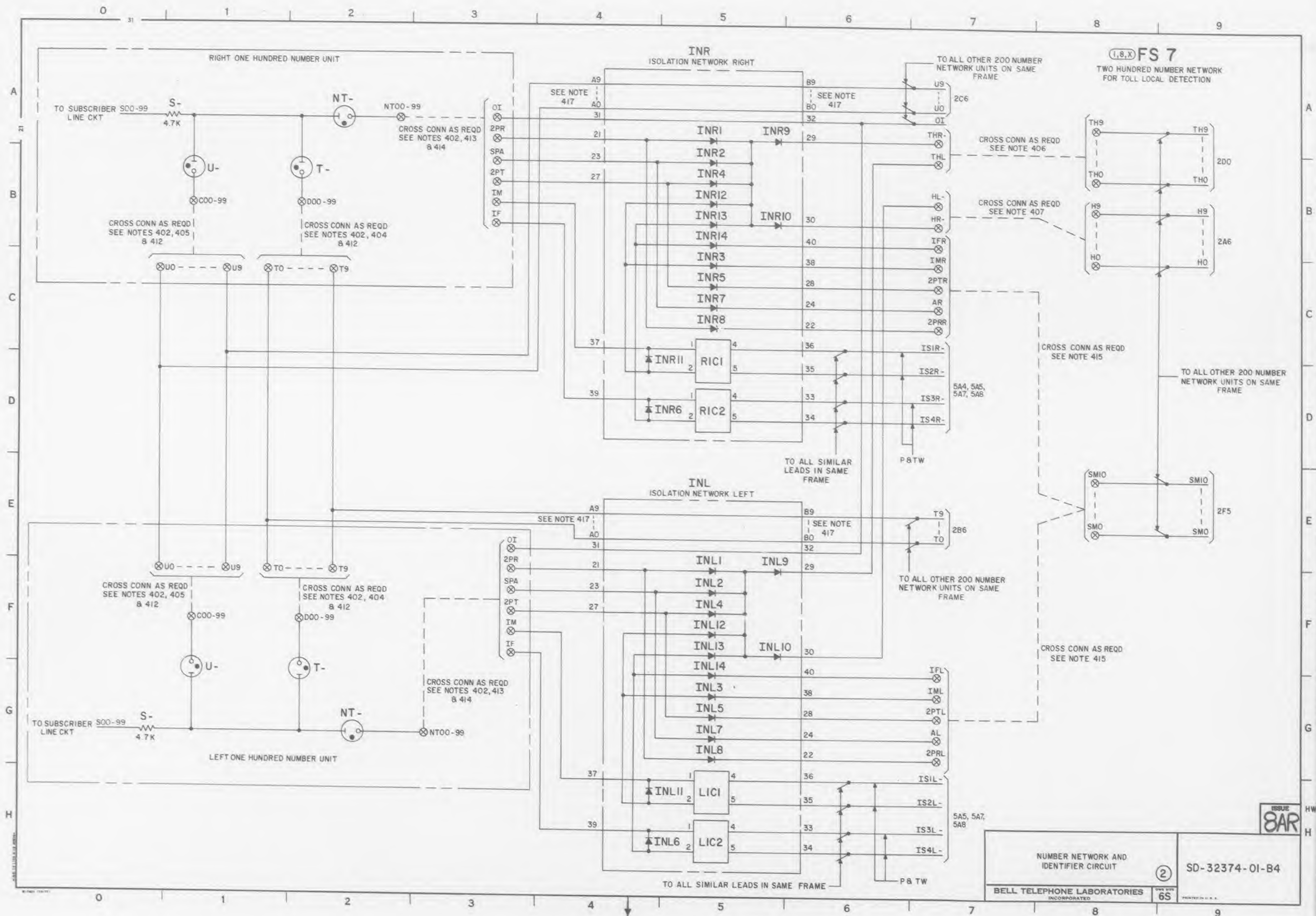
1.2Y FS I
TWO HUNDRED NUMBER UNIT
FOR ANI SYSTEM



SD-32374-01-B1





NUMBER NETWORK AND
IDENTIFIER CIRCUITBELL TELEPHONE LABORATORIES
INCORPORATED

2

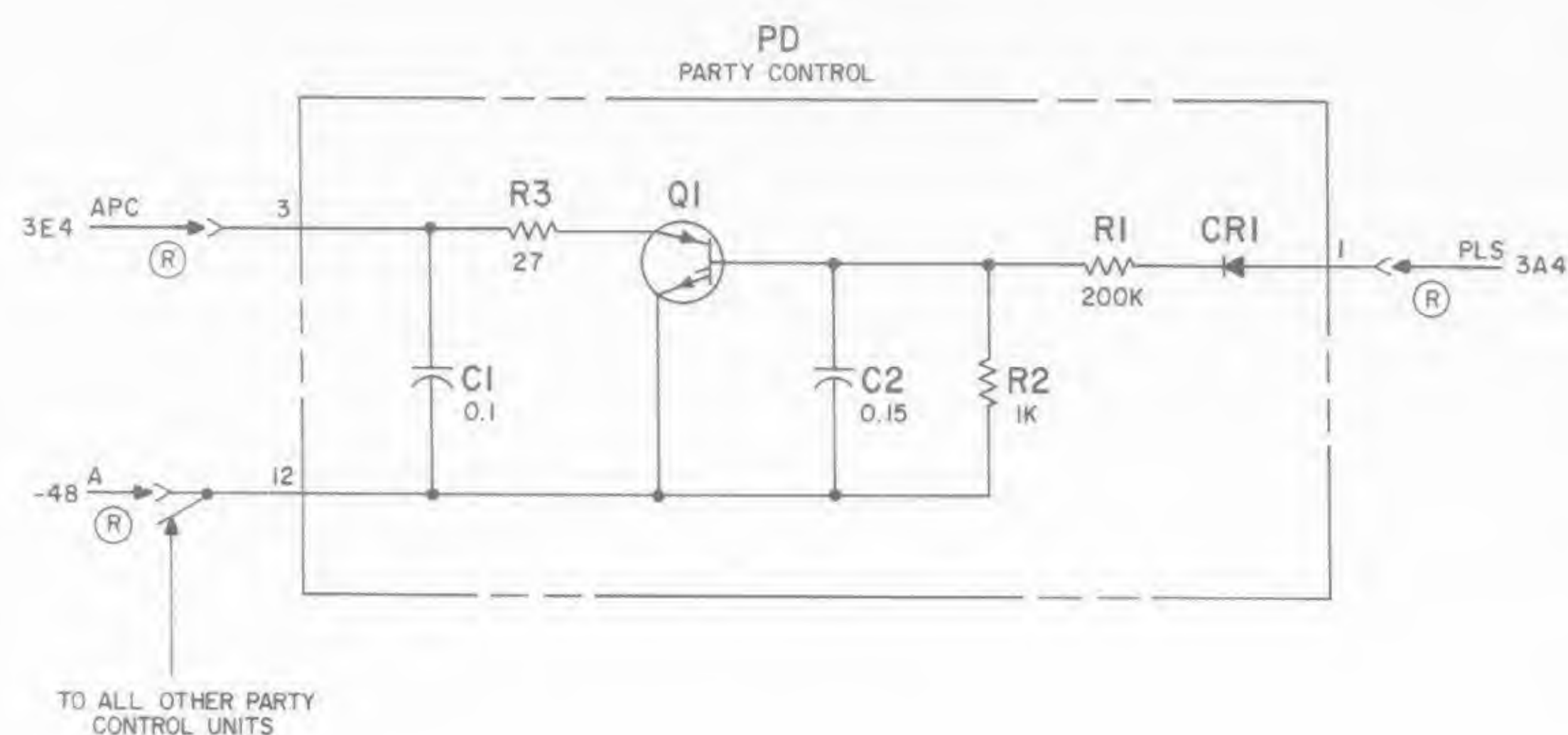
6S

SD-32374-01-B4

ISSUE
8AR

⑨FS 8 (M.D.)

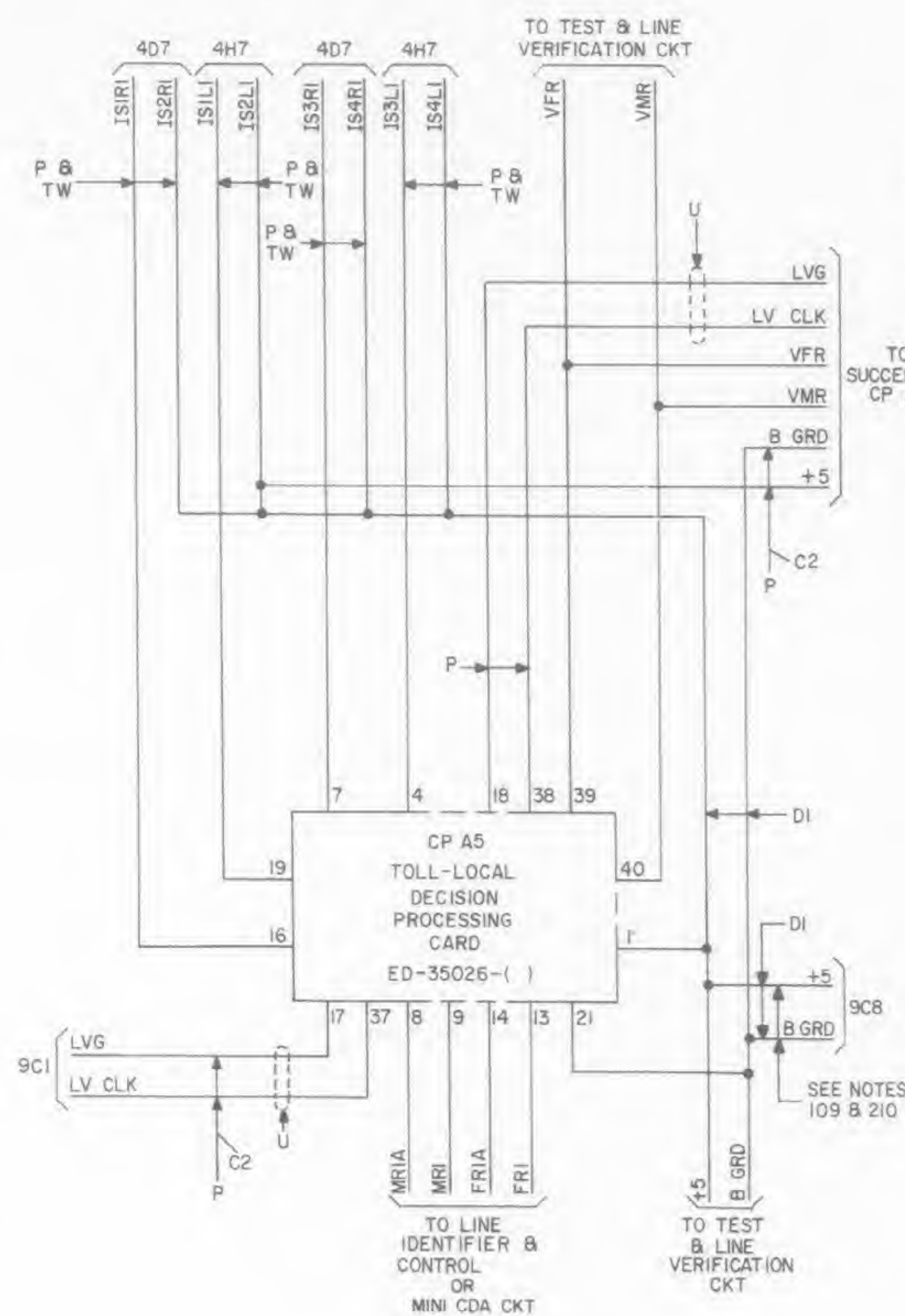
PARTY DISCRIMINATION CONTROL
(SEE NOTES 102 & 107)



NOTE:

- DO NOT RUN LV-CLK & LVG LEAD THROUGH T.S. PCHG RUN DIRECT TO CP-GRD. SHIELD AT ONE END ONLY

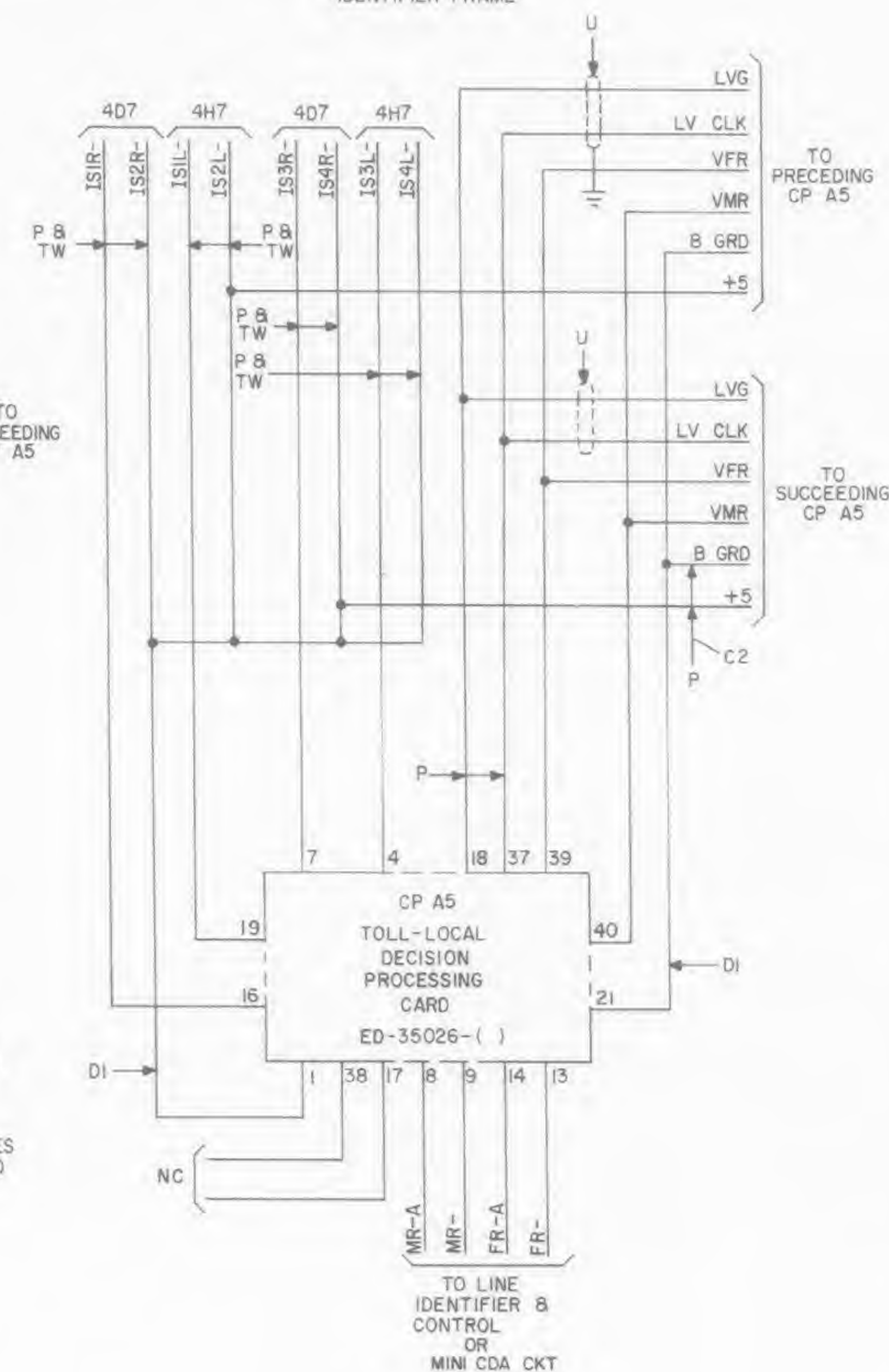
FIRST NUMBER
NETWORK AND
IDENTIFIER FRAME



⑩FS 9

CLASS DECISION CKT

OTHER THAN FIRST
NUMBER NETWORK AND
IDENTIFIER FRAME



ISSUE
16B

NUMBER NETWORK AND
IDENTIFIER CIRCUIT

SD-32374-01-B5

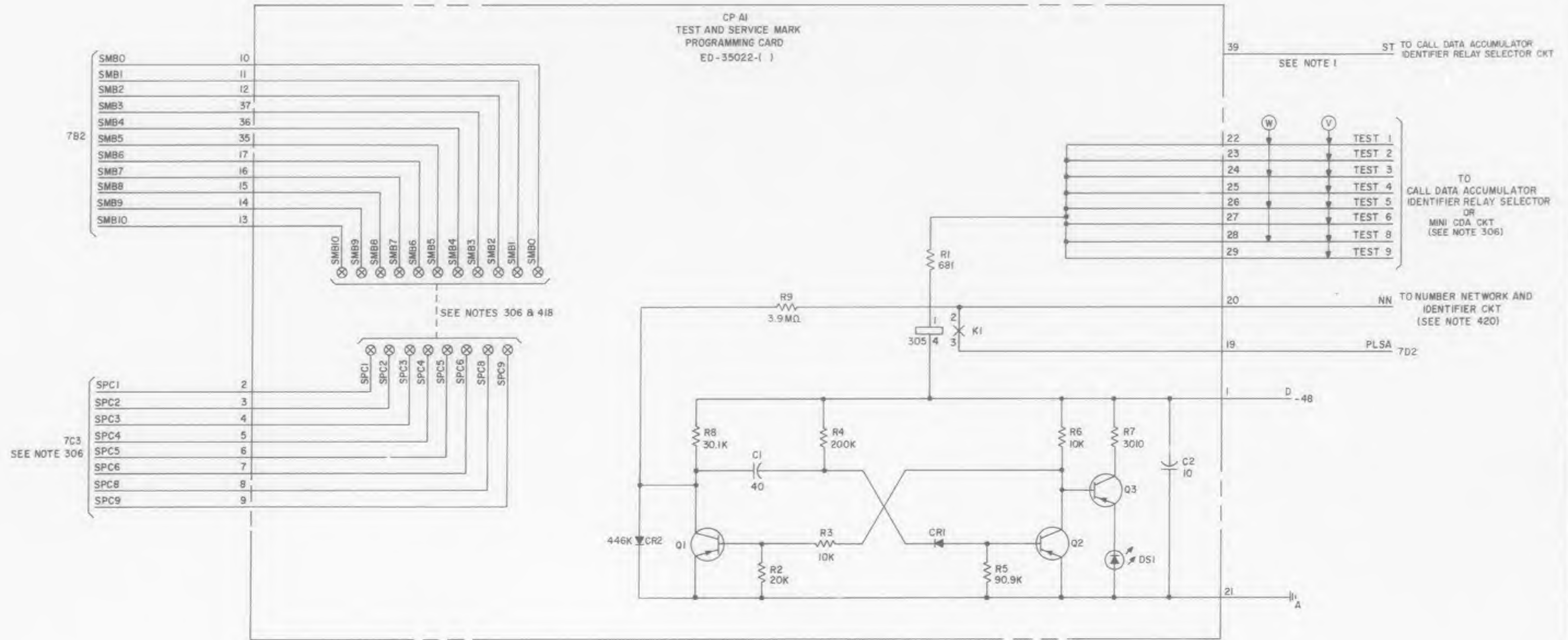
AT&T BELL LABORATORIES

2

6S

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II PART OF FS 10 IDENTIFIER AND CONTROL CKT



NOTES:
1. THE ST TERMINAL (PIN 39) IS USED FOR INSTALLATION TESTING ONLY WHEN THIS CARD IS REPLACED WITH THE TEST CARD ITE 5470 DET 2.

SD-32374-01-B6

16B

NUMBER NETWORK AND IDENTIFIER CIRCUIT

2

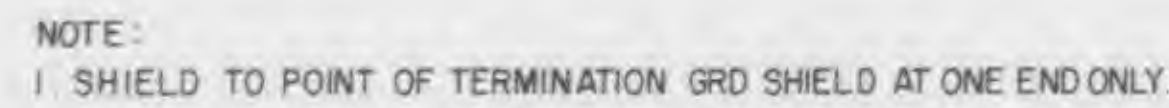
SD-32374-01-B6

AT&T BELL LABORATORIES

6S

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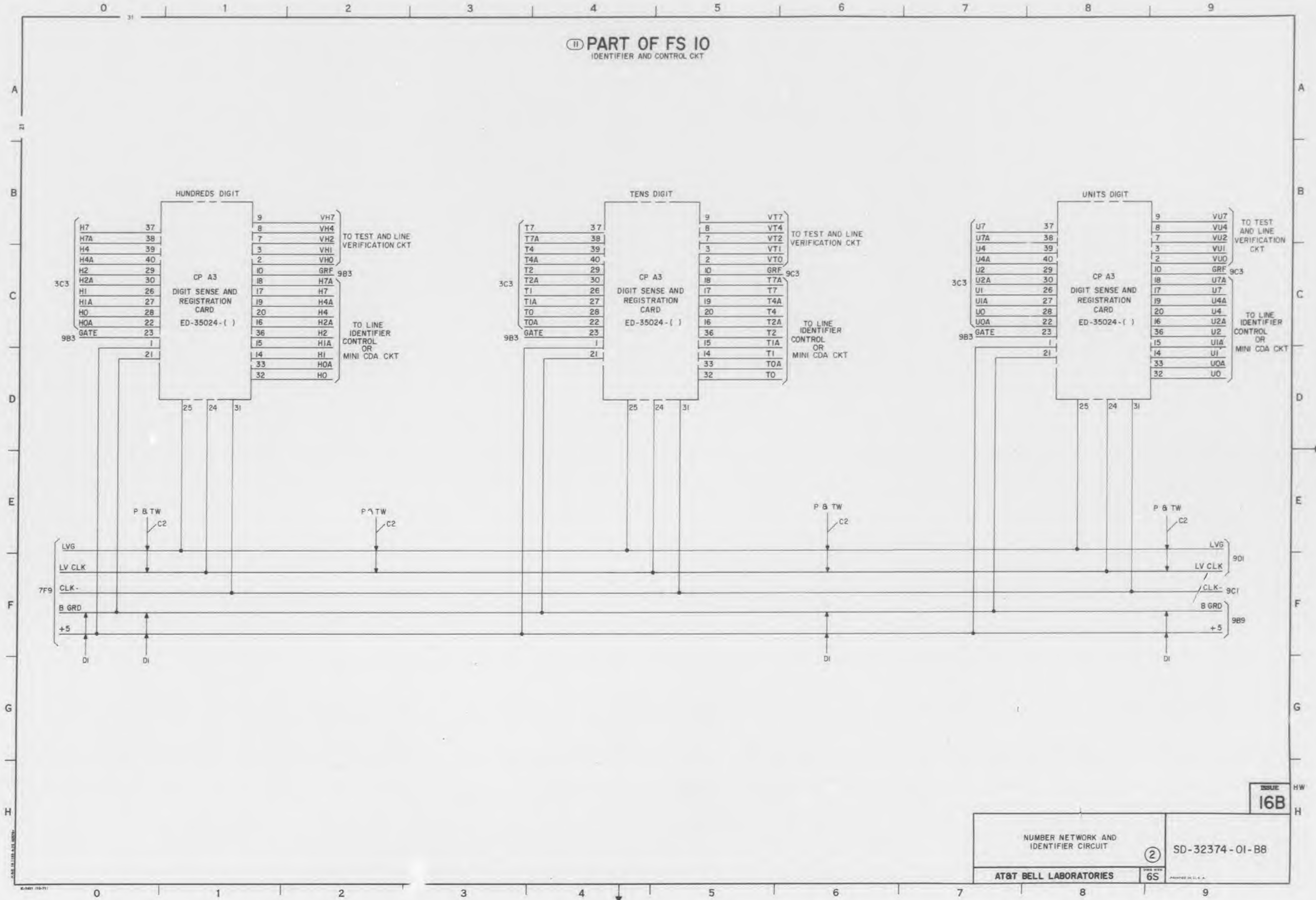
IDENTIFIER AND CONTROL CKT
(SEE NOTE 1)



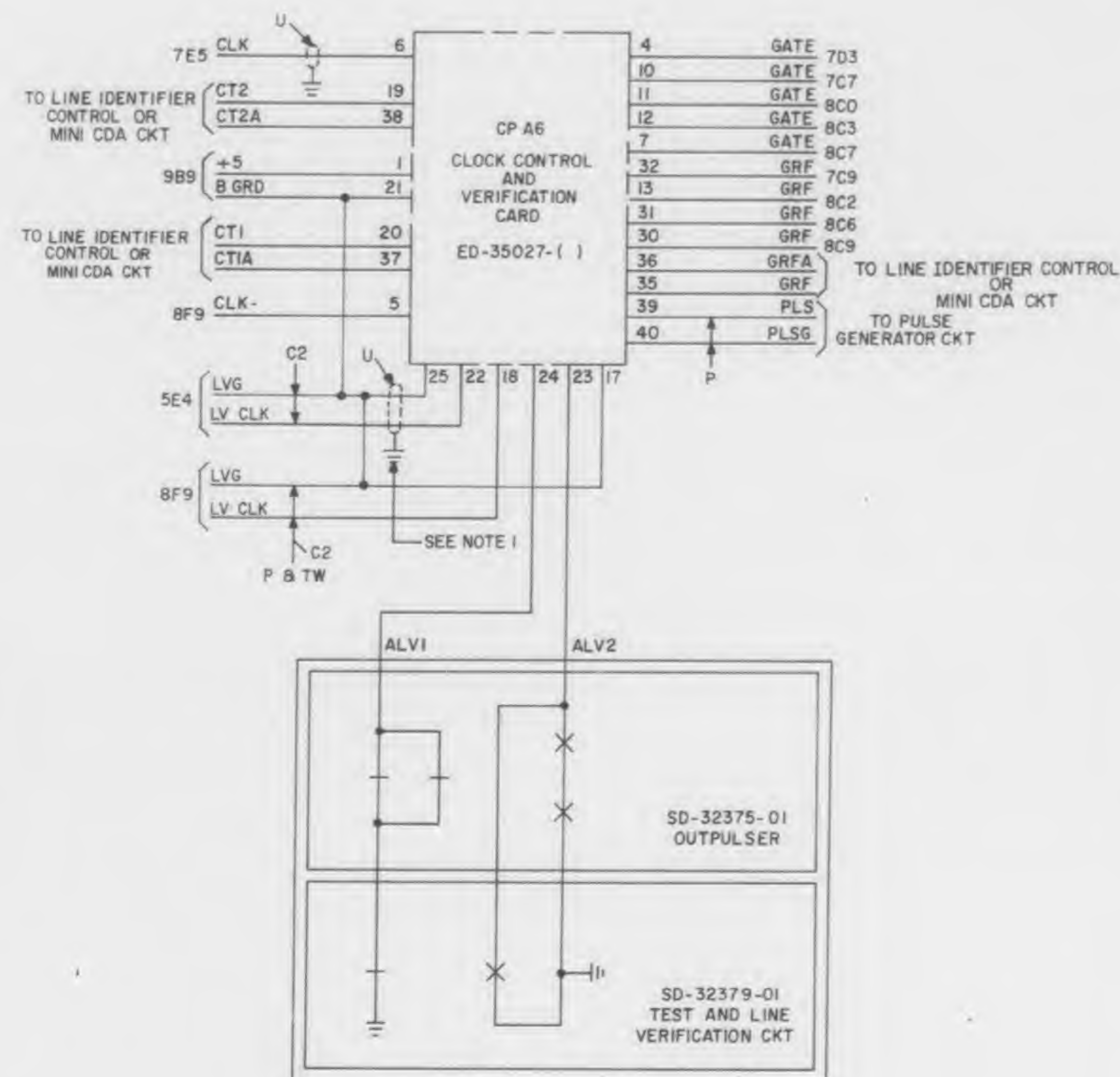
ISSUE
6B

SD-32374-01-B7

II PART OF FS 10 IDENTIFIER AND CONTROL CKT

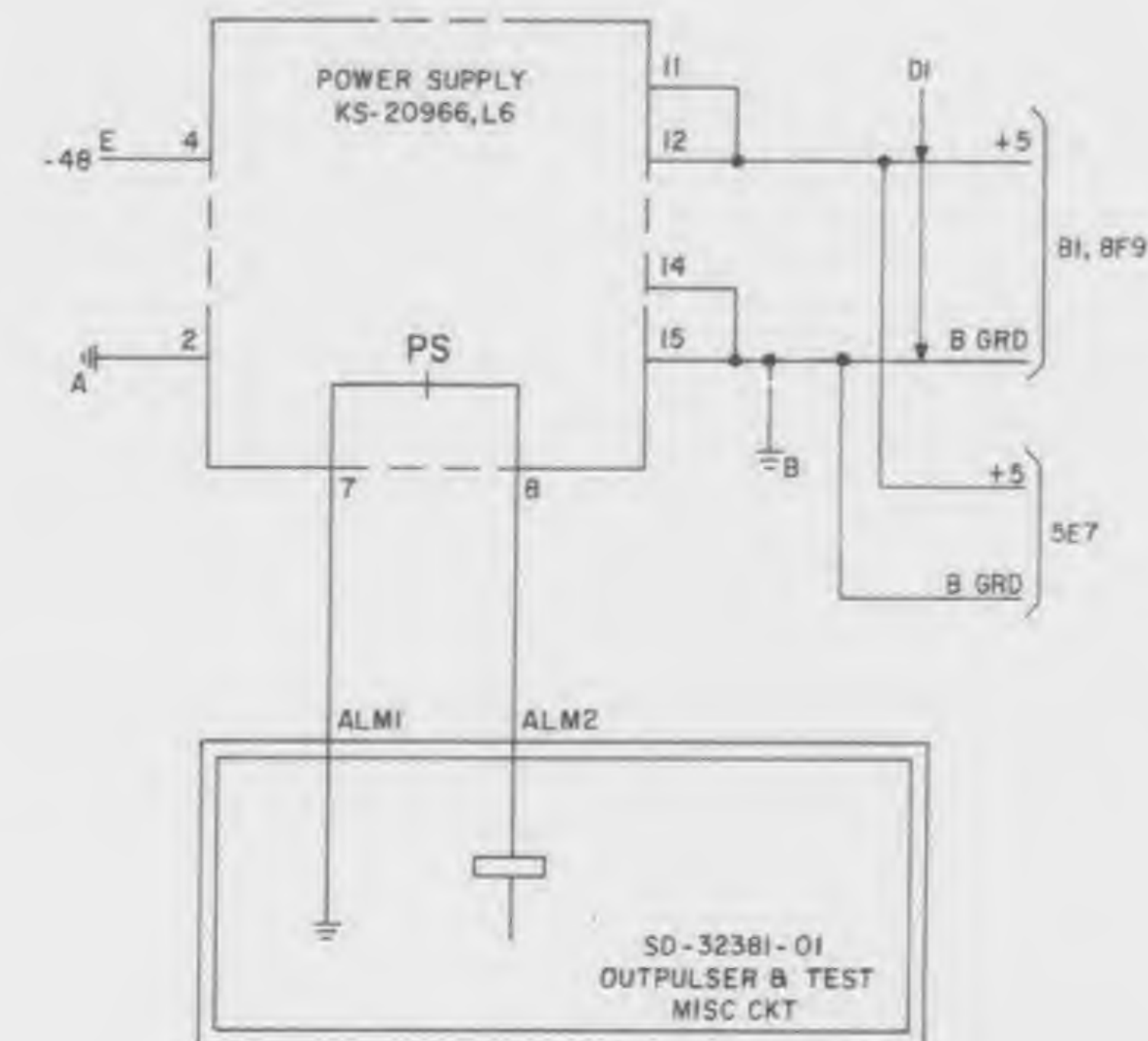


11 PART OF FS 10
IDENTIFIER AND CONTROL CKT



NOTE:
1. SHIELD TO BE GROUNDED AT ONE ONLY.

12 FS II
POWER SUPPLY



SD-32374-01-B9

NUMBER NETWORK AND
IDENTIFIER CIRCUIT

AT&T BELL LABORATORIES

2

65

SD-32374-01-B9

16B

APP FIG. 3

COMPONENT ASSEMBLY

[4] HO-4, TO-4, THO-4, UO-4 ED-32317-()GI (CAI)

<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
<u>RESISTOR</u>		
[5] HOA-4A	2A7	
[5] HOB-4B	2A7	
[5] TOA-4A	2B7	
[5] TOB-4B	2B7	
[5] THOA-4A	2DI-GI	
[5] THOB-4B	2DI-GI	
[5] UOA-4A	2D7	
[5] UOB-4B	2D7	

COMPONENT ASSEMBLY

[4] H5-9 T5-9 TH5-9 U5-9 FD-32317-(1) 62 (CA2)

<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
<u>RESISTOR</u>		
[5] H5A-9A	2A7	221A- KS-20810, L1A, 75K
[5] H5B-9B	2A7	
[5] T5A-9A	2B7	
[5] T5B-9B	2B7	
[5] TH5A-9A	2A1- D1	
[5] TH5B-9B	2A1- D1	
[5] U5A-9A	2C7	
[5] U5B-9B	2C7	

COMPONENT ASSEMBLY

[2] SMA, SMB ED-32317-()G3 (CA3)

[2] INL,INR ED-32318-()G1		DESIG	LOC	CODE
19	20	DIODE		
17	18			
15	16	[10] INL1-10	IE5-G5	446F
		[10] INR1-10	IB5-G5	446F

POS	DESIG	L0C	CODE	DESIG	L0C	CODE
a	0I	2D7	221A- KS- 20B10, LIA, 75K	SM5	2F7	221A- KS- 20B10, LIA, 75K
b	SM0	2D7		SM6	2F7	
c	SM1	2E7		SM7	2G7	
d	SM2	2E7		SM8	2G7	
e	SM3	2E7		SM9	2G7	
f	SM4	2F7		SM10	2H7	

RESISTOR		
DESIG	LOC	CODE
A	2D6	221A KS-20810, L1A, 18.7K

APP FIG. 4

RELAY					
DESIG	RP	TP			
CODE	AF15A	AF15A			
OPTION					
CONT	LOC	CONT	LOC	CONT	LOC
12	PR 303	PR 302			
11	M 3G1	M 3F1			
10	EB	EB			
9	PM	PM			
8					
7	M 3G1	M 3E1			
6	EBM	EBM			
5	M 3F1	M 3E1			
4					
3	M 3F1	M 3D1			
2	PR 3F2	PR 3F2			
1	M 3E3	M 3E3			
COIL	3E4	3E4			

CAPACITOR

DESIG	LOC	CODE
C5	3E2	513C
C6	3E2	513C

DIODE

DESIG	LOC	CODE
CR1	3G2	426R
CR2	3F2	426R

LAMP

DESIG	LOC	CODE
L	3D4	13J (RES)

NETWORK

DESIG	LOC	CODE
RP	3E4	185A
TP	3E4	185A

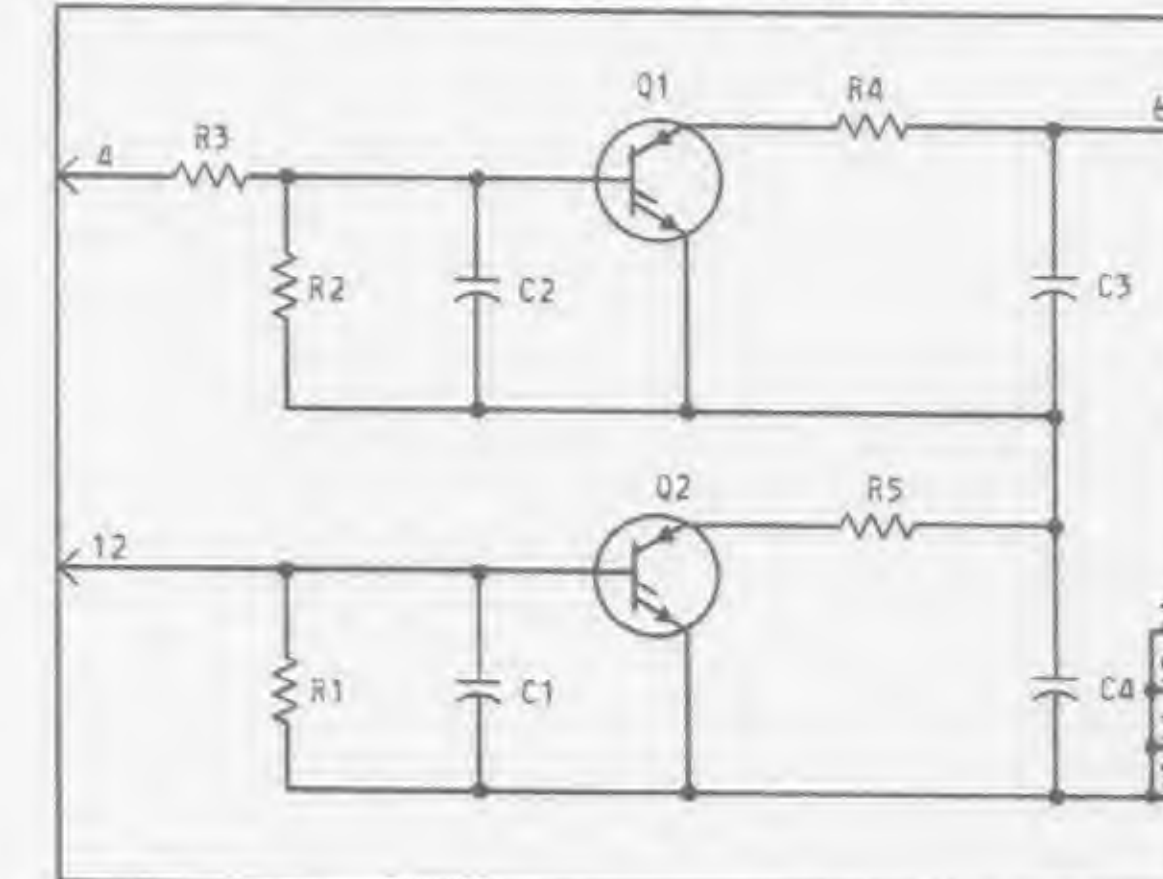
RESISTOR

DESIG	LOC	CODE
R6	3D3	18AF

APP FIG. 5

COMPONENT ASSEMBLY

DETECTOR - SEE NOTE 303 ED-32315-() G1 (CA4)



DESIG	LOC	CODE
-------	-----	------

DESIG	LOC	CODE
C1	3C5	5350F
C2	3B5	542L
C3	3B6	542L
C4	3C6	542L

EXTERNAL RESISTOR (SEE NOTE 305)

DESIG	LOC	CODE
[5] AHO,1,2,4,7	3B3	KS-20616, L1A, 10K
[11] ASMO-10		
[5] ATQ,1,2,4,7		
[5] ATHO,1,2,4,7		
[5] AUO,1,2,4,7		

RESISTOR

DESIG	LOC	CODE
R1	3C5	221A KS-20810, L1A, 1K
R2	3B5	1K
R3	3A4	200K
R4	3A6	27
R5	3B6	27

TRANSISTOR

DESIG	LOC	CODE
Q1	3A5	27A
Q2	3B5	27A

APP FIG. 6

TEN NUMBER STRIP

ED-32324-() G1 E/W

LAMP

DESIG	LOC	CODE
[10] NT-	3D9	KS-19554
[10] T-	3E9	KS-19554
[10] U-	3E9	KS-19554

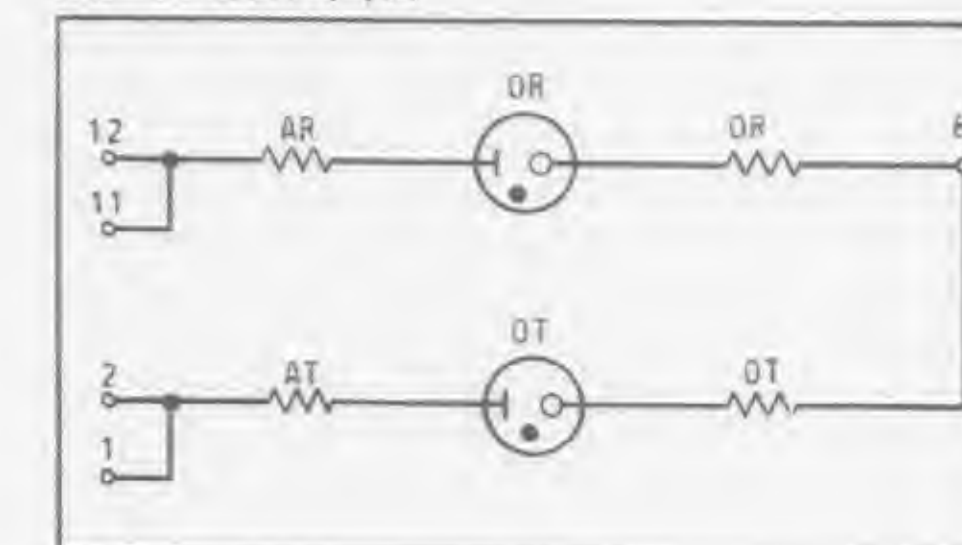
RESISTOR

DESIG	LOC	CODE
[10] S-	3D8	KS-13490, L1, 4700
		KS-16645

APP FIG. 7(MFR DISC.)

COMPONENT ASSEMBLY

SON ED-32317-() G4



DESIG	LOC	CODE
-------	-----	------

DESIG	LOC	CODE
OR	3G8	KS-19554
OT	3G8	KS-19554

RESISTOR

DESIG	LOC	CODE
AR	3G8	KS-13490, L1, 4700
AT	3G8	KS-13490, L1, 4700
OR	3G9	221A, 75,000
OT	3G9	221A, 75,000

NUMBER NETWORK AND
IDENTIFIER CIRCUIT

2

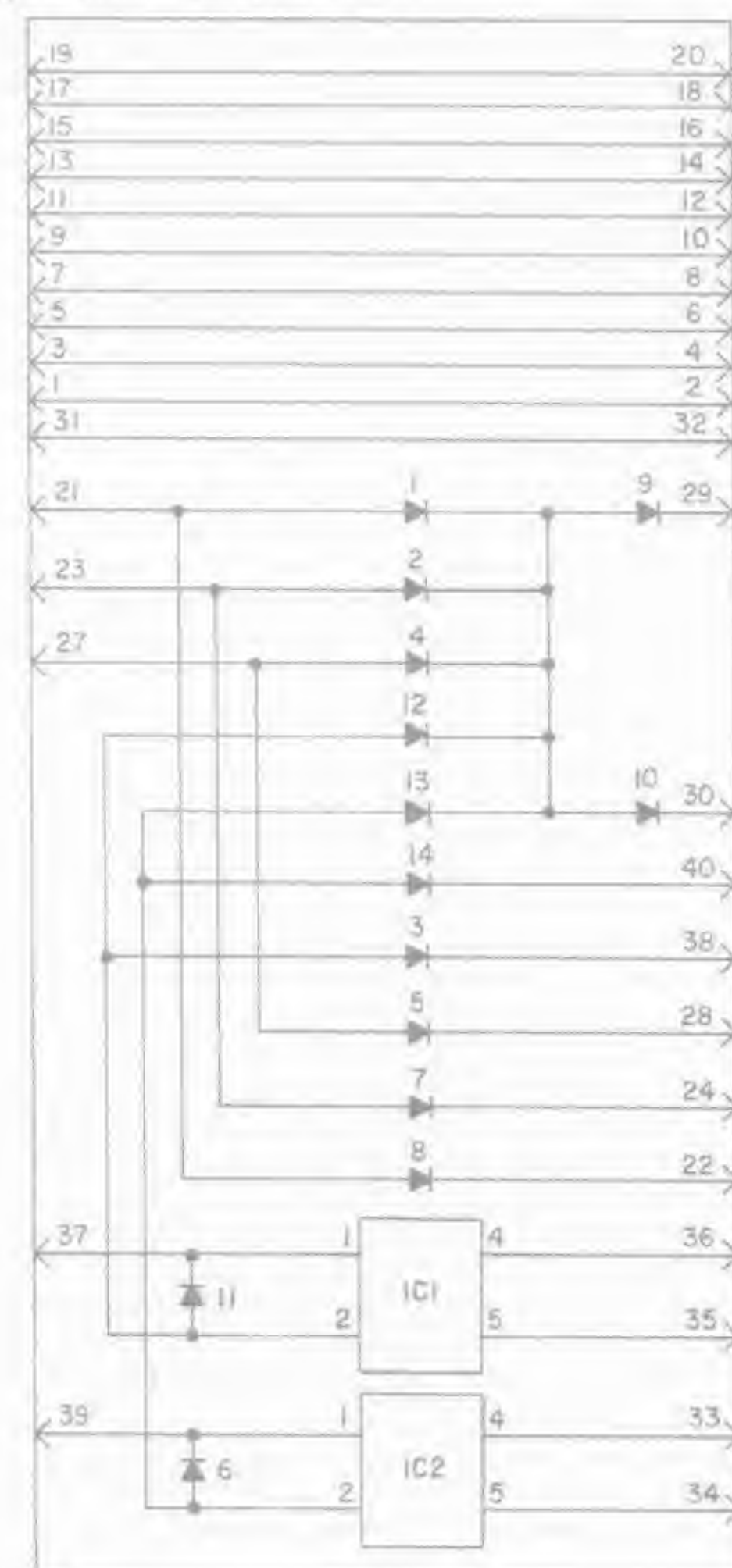
SD-32374-01-C2

BELL TELEPHONE LABORATORIES
INCORPORATED

65

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APP FIG. 8

COMPONENT ASSEMBLY
[2] INL, INR ED-32318-() G2

DIODE	LOC	CODE
DESIG		
[14] INL1-14	4F-H5	446F
[14] INR1-14	4A-D5	446F

ISOLATOR	LOC	CODE
DESIG		
LIC1, 2	4H5	CL1-3
RIC1, 2	4D5	CL1-3

APP FIG. 10

PRINTED WIRING BOARD

DESIG	LOC	CODE
CP A5	5B8	ED-35026-()

APP FIG. 11

PRINTED WIRING BOARD

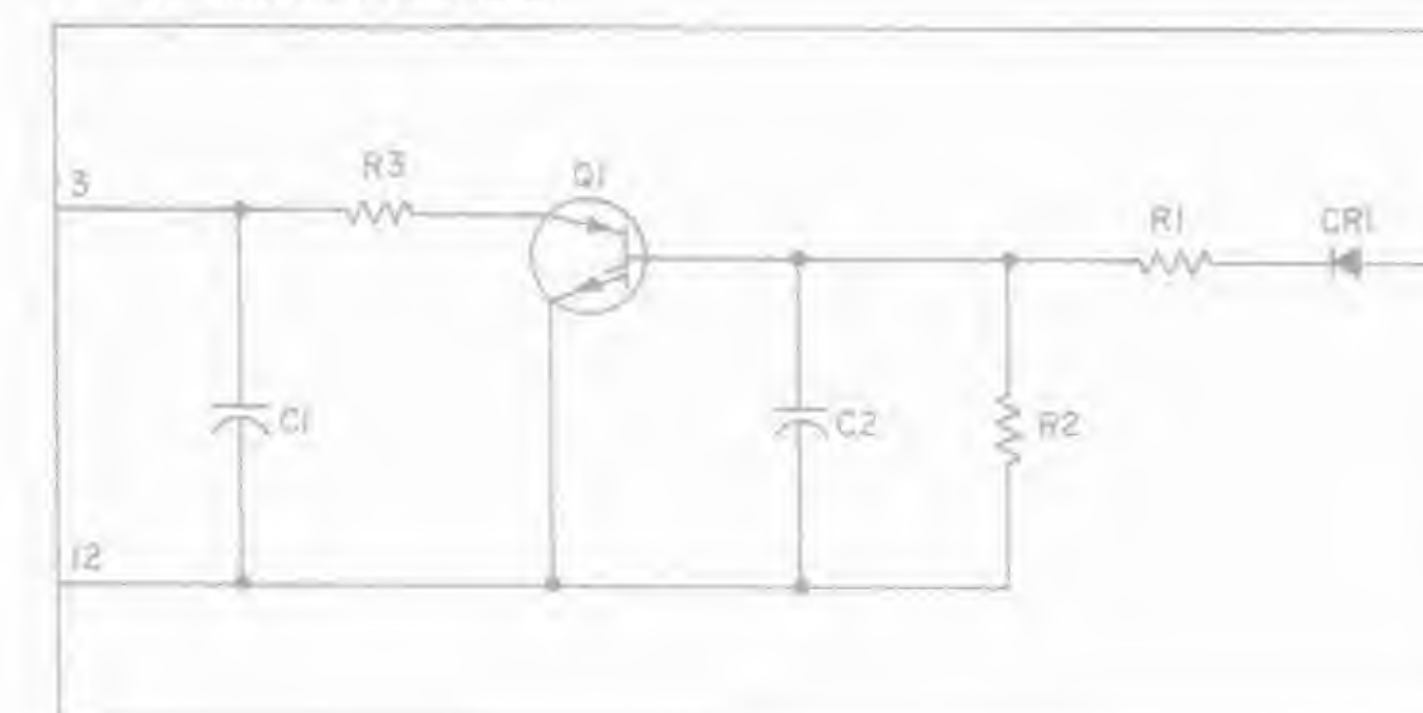
DESIG	LOC	CODE
CP A1	6C4	ED-35022-()
CP A2	7C4	ED-35023-()
[4] CP A3	7C8, 8C1, 6C4, 8C8	ED-35024-()
CP A4	7C1	ED-35025-()
CP A6	9B2	ED-35027-()

APP FIG. 12

PRINTED WIRING BOARD

DESIG	LOC	CODE
PS	9B7	KS-20966, L6

APP FIG. 9 (M.D.)

COMPONENT ASSEMBLY
PD ED-35020-() G2 (CA5)

CAPACITOR	LOC	CODE
DESIG		
C1	5B1	KS-19774, L5, 0.1
C2	5B2	KS-19774, L5, 0.15

DIODE	LOC	CODE
DESIG		
CR1	5B3	446F

RESISTOR	LOC	CODE
DESIG		
R1	5B2	200K
R2	5B2	1K
R3	5B1	27

TRANSISTOR	LOC	CODE
DESIG		
Q1	5B1	27A

CIRCUIT NOTES:

101.

DESIG	FUSE AMP	POTENTIAL	ONE PER
* A	1-1/3	-48	CKT
* B	1-1/3	-48	CKT
* C	1-1/3	-48	CKT
* D	1-1/3	-48	CKT
* E	1-1/3	-48	CKT
A	-	GRD	CKT
**B	-	GRD	CKT
<u>BATTERY SYMBOL</u>		<u>VOLTAGE RANGE</u>	
-48		45-52	
* FUSES ARE TO BE LOCATED ON OUTPUTPULSER FRAME			
** THE B GROUND MUST BE FURNISHED FROM THE POWER ROOM USING A 14GA CONDUCTOR.			

102.

FEATURE OR OPTION		PROVIDE		
		APP FIG.	APP OR WRG	QUANTITY
TEN NUMBER NETWORK STRIP (SEE NOTE 111)	ANI ONLY	1	Y	TEN PER 100 NO.
	ANI-AMARS		X	
ISOLATION NETWORK (SEE NOTE 111)	ANI ONLY	2		ONE PER 200 NO.
	ANI-AMARS	8		
NETWORK		3		ONE PER FRAME
TWO PARTY DISCRIMINATION CKT SEE NOTE 107 AND 110	ANI ONLY	4	Y,Q	ONE PER FRAME
	NO MESSAGE RATE		Y,Z,Q	
	ANI-AMARS	4	X,Q	
	NO MESSAGE RATE		X,Z	
DETECTOR 3	SERVICE MARK	5		AS REQD MAX 11
	THOUSANDS			
	HUNDREDS			FIVE PER CKT
	TENS			
	UNITS			
	OPERATOR IDENTIFICATION			ONE PER CKT
WHERE ONE WAY ORIGINATING LINES ARE PROVIDED		6		TWO PER FR AS REQD
WHEN ANI-AMARS SYSTEM IS USED (SEE NOTE 111)	AMARS CLASS DECISION CIRCUIT	10		ONE PER NUMBER NETWORK FRAME
	IDENTIFIER AND CONTROL CIRCUIT	11	W	ONE PER IDENTIFIER FRAME
	POWER SUPPLY	12		

CIRCUIT NOTES (CONT):

103.

NETWORK VALUES		
NETWORK NO.	RESISTANCE IN OHMS	CAPACITANCE IN UF
1	470	0.11

104.

RECORD OF APP FIGURES, WIRING AND APPARATUS CHANGES						
CHANGED ON ISS	IF JOB RECORDS DO NOT SPECIFY	THIS OPTION WAS FURN	SEE NOTE	USE IN CIRCUIT		
				STD	A&M	MD
6D			106			APP FIG 7
7B	X OR Y	Y	102	X,Y		
	APP FIG. 8,9,10,11 AND 12	NONE	102	APP FIG 8,9,10,11 AND 12		
9B	RESISTORS			KS-16645, LI		KS-13490, LI
12B	W,V	V	102,108	W	V	
13BU	S,T	S		T		S
14B	R	R,X	102, 110	Q		R
	Q	Q,Y				
						APP FIG.9
15B			111			
16B			112			

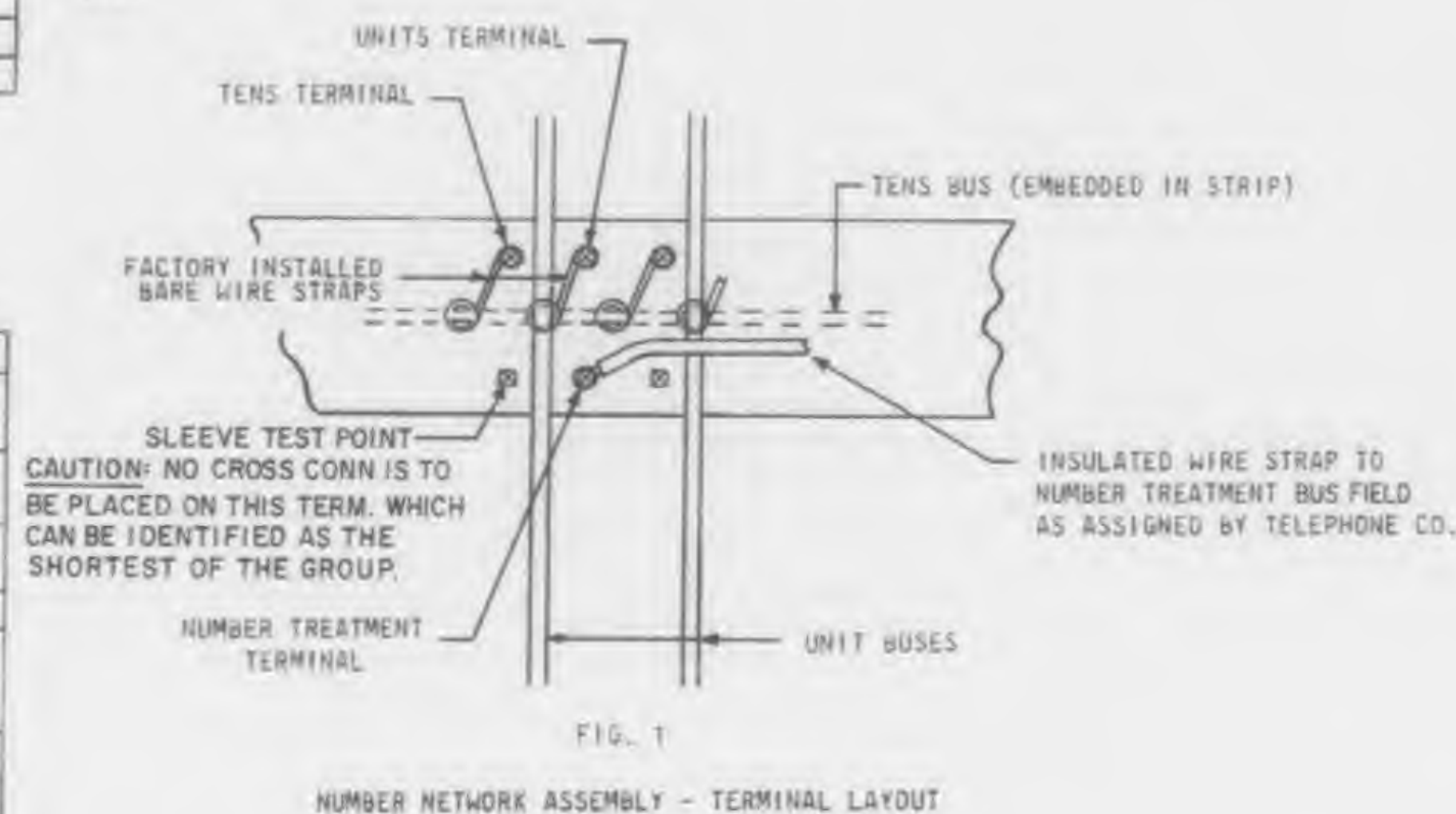
105. THE NETWORKS OF A ONE HUNDRED NUMBER UNIT MAY BE TERMINATED ON A DISTRIBUTING FRAME TERMINAL STRIP FOR ASSIGNMENT TO OTHER THAN SUBSCRIBER LINE NUMBERS, SUCH AS TRUNK NUMBERS FOR PBX ADD.

106. (MFR DISC.)

FEATURE OR OPTION		PROVIDE		
		APP FIG.	APP OR WRG	QTY
WHERE SERVICE OBSERVING IS PROVIDED	SERVICE OBSERVING DETECTOR	5		ONE PER CKT
	SERVICE OBSERVING NETWORK	7		ONE PER CKT

EQUIPMENT NOTES:

201. THE TH-, M-, T-, U-, OI, AND SM - LEADS SHALL BE RUN IN SEPARATE CABLE.
202. THE SUM OF THE CABLE LENGTHS OF ALL CABLES CONNECTING SECONDARY NETWORKS AND IDENTIFIER SHALL NOT EXCEED 100 FEET. (SEE NOTE 207)
203. THE S- LEAD CABLE LENGTH IS RESTRICTED TO 200 FEET MAXIMUM.
204. THE PLS LEAD SHALL BE AN INDIVIDUAL (20BH) WIRE.
- 205.



206. A CONTINUOUSLY OPERATING LIGHT IS PROVIDED AT THE REAR OF EACH NN-ID FRAME TO ACTIVATE THE NEON GLOW LAMPS AND MAINTAIN THE FIRING LEVEL WITHIN PRESCRIBED LIMITS.
207. A MAXIMUM OF FIVE NN-ID FRAMES MAY BE ASSOCIATED WITH A SINGLE IDENTIFIER (SEE NOTE 202).
208. BATTERY FEED MUST BE TO TERMINAL 1 ON EACH DETECTOR IN THE IDENTIFIER.
209. TERMINALS 3, 5 & 7 SHALL NOT BE USED FOR CONNECTING PURPOSES.
210. THE DROP IN VOLTAGE OF THIS +5 VOLTS SUPPLY TO ANY POINT IN THE CIRCUIT SHALL NOT BE MORE THAN (-.1) VOLT.
211. REFER TO SD-32553-01 FOR CABLE REQUIREMENTS FOR USE WITH AMARS FOR CDA APPLICATIONS INCLUDING THE CDA 2WY AUX LINE CKT PER NOTE 111.

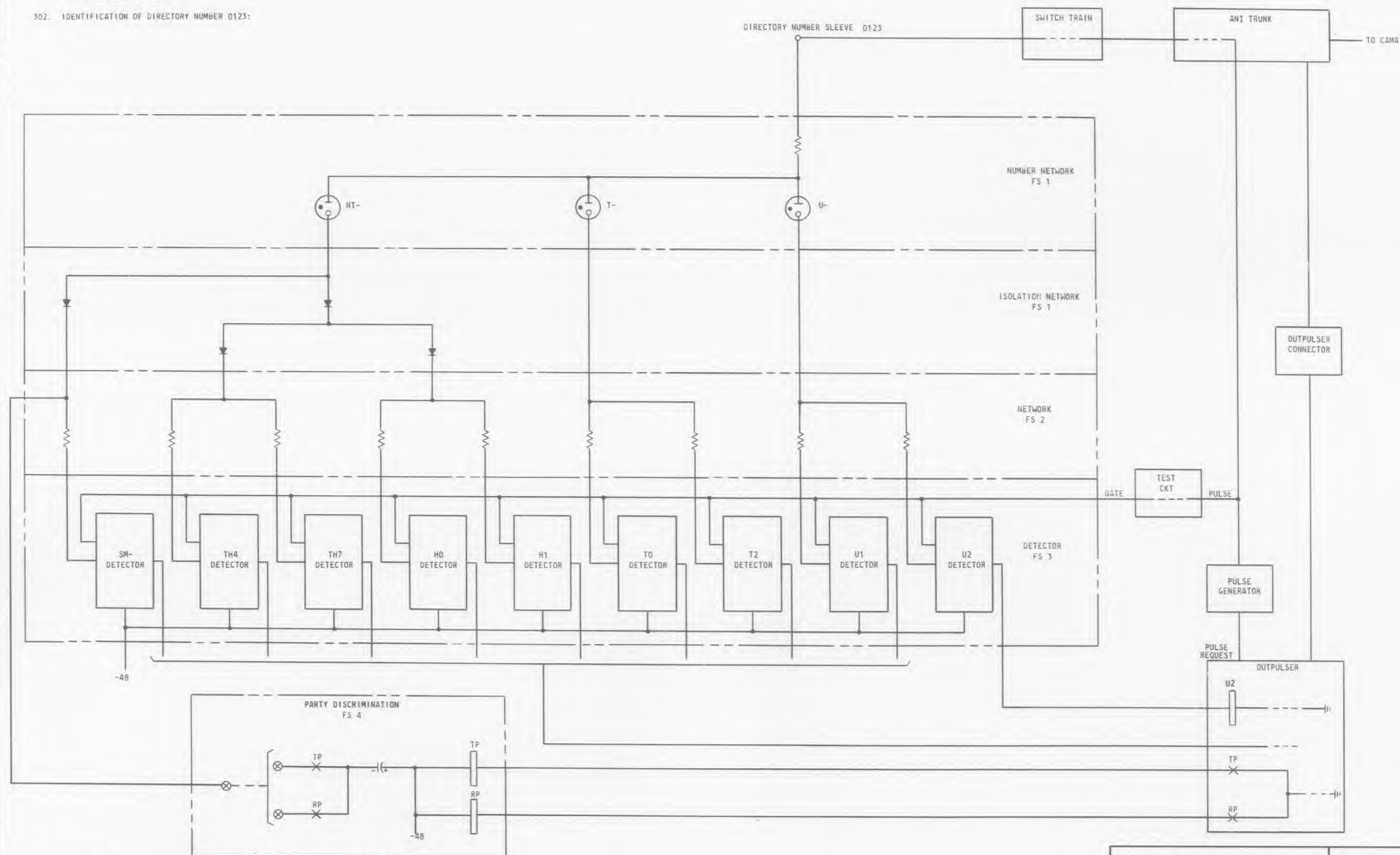
CIRCUIT NOTES (CONT):

107. WHEN ANI-AMARS SYSTEM IS USED AND IS EQUIPPED WITH AMARS PARTY DISCRIMINATION CONTROL, SERVICE OBSERVING PACK MUST BE REMOVED.
108. PRIOR TO ISSUE 12B OPTION V AND W WERE A PART OF OPTION X. TO BRING THIS DRAWING INTO AGREEMENT WITH WECO DRAWINGS, OPTION X IS BEING REMOVED FROM LEADS TEST 1 THRU 6, 8 & 9 ON CAD 2.
109. DI INDICATES A SINGLES WIRE RUN IN THE OPEN (NOT SEWN IN CABLE FORM) DIRECTLY FROM TERMINAL TO TERMINAL, WITH A MINIMUM AMOUNT OF SLACK CONSISTENT WITH THE TYPE OF TERMINALS AND THE COMPONENT ARRANGEMENT AND MOUNTING CONDITIONS ENCOUNTERED. SEE BSP 005-101.
110. PRIOR TO ISSUE 14B OPTION R WAS PART OF OPTION X AND IS NOW M.D. OPTION Q WAS A PART OF OPTION Y. APP FIG 9 IS NOW M.D. IN OFFICES WITH ANI-AMARS WITH NO MESSAGE RATE, REPLACE R OPTION WITH Q PER NOTE 102 FOR IMPROVED CKT OPERATION.
111. WHEN ANI-AMARS IS PROVIDED AND DETAILED BILLING OF COMMON CARRIER ACCESS VIA FEATURE GROUP A (FGA) LINES BY CDA AND NO. 1A AMARC IS REQUIRED, GROUPS 1W MULTIPLES OF 100 NUMBERS IN THE REGULAR NUMBER NETWORK SERIES MUST BE ADDED AND THE 3- (100-99) LEADS CABLED TO HIDE OR HIDE DISTRIBUTING FRAME TERMINAL STRIPS. THESE TERMINAL STRIPS MUST BE DEDICATED TO ONLY THIS FGA BILLING FEATURE AND MUST NOT BE ASSOCIATED WITH A CONNECTOR MULTIPLE. THE 5- (100-99) LEADS WILL BE CROSS CONNECTED TO DISTRIBUTING FRAME APPEARANCES OF ANI- LEADS OF CDA 2-WAY AUXILIARY LINE CIRCUITS (ALC) PER SD-32563-01. AS THEY ARE ASSIGNED ON A SERVICE ORDER. THUS, A GROUP OF 100 NUMBERS MUST BE PROVIDED FOR EACH 100 ALCS OR PORTION THEREOF. AS THE OFFICE, THOUSAND AND HUNDRED DIGITS OF EACH 100 NUMBERS IN THE REGULAR NUMBER SERIES IS DETERMINED, THEN THAT INFORMATION SHOULD BE FORWARDED TO THE AMARC CENTER FOR INCLUSION INTO THE APPROPRIATE DATA BASE IN ORDER TO UNIQUELY IDENTIFY BOTH THE ORIGINATING AND TERMINATING FGA CALLS AND THE COMMON CARRIER TO BE BILLED. (SEE NOTES 211, 304 AND 307).
112. PRIOR TO ISSUE 16B, CONNECTION TO THE MINI CDA WAS NOT SHOWN.

INFORMATION NOTES:

301. UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS
VALUES PRECEDED BY THE SYMBOL + (PLUS) OR
- (MINUS) ARE IN VOLTS.

302. IDENTIFICATION OF DIRECTORY NUMBER 0123:



303. DETECTORS ASSUME FUNCTIONAL DESIGNATION
ACCORDING TO STAMPING OF CONNECTOR IN WHICH
PLUGGED: HO, 1, 2, 4, 7; OI; SO; SMO-IO; TO, 1, 2, 4, 7;
THO, 1, 2, 4, 7; UO 1, 2, 4, 7.

SD-32374-01-D2

NUMBER NETWORK AND
IDENTIFIER CIRCUIT

②

SD-32374-01-D2

BELL TELEPHONE LABORATORIES
INCORPORATED

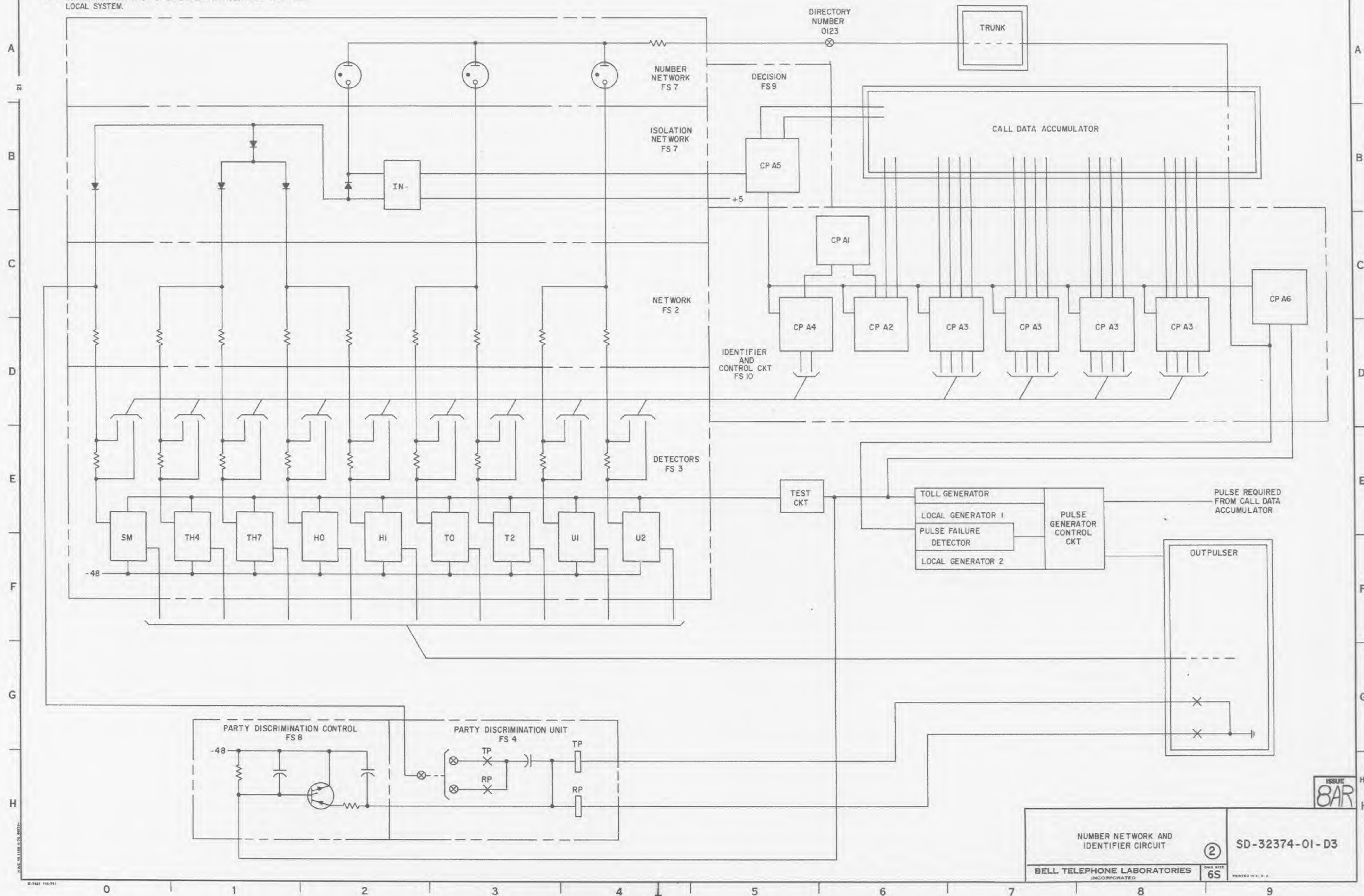
6S

PRINTED IN U.S.A.

DRAWING
ISSUE
1
RJB
CND
GM
20
NRC
MFA
GM

ISSUE
7B
HW

INFORMATION NOTES (CONT):
304. LOCAL IDENTIFICATION OF DIRECTORY NUMBER 0123 IN A TOLL LOCAL SYSTEM.



SD-32374-01-D3

NUMBER NETWORK AND IDENTIFIER CIRCUIT
BELL TELEPHONE LABORATORIES
INCORPORATED

2
6S

SD-32374-01-D3

ISSUE
8AR

0 1 2 3 4 5 6 7 8 9

INFORMATION NOTES (CONT):

305. THE AMARS RESISTORS (FS 4) ASSUME THE SAME FUNCTIONAL DESIGNATION AS THEIR ASSOCIATED DETECTORS; HOWEVER, A PREFIX LETTER "A" WILL PRECEDE THIS DESIGNATION. OPERATOR INTERCEPT (OI) AND SERVICE OBSERVING (SO) DETECTORS WILL NOT BE EQUIPPED WITH AMARS RESISTORS. SEE NOTE 303 AND TABLE B, SHEET B3.

306. THE BINARY EQUIVALENT OF 7 (IIIO) AND THE ERROR SIGNAL IN THE AMARS OFFICE CODE LOGIC (BINARY IIII) WILL BOTH BE CONSIDERED AS ERROR SIGNALS DUE TO THEIR SIMILARITY. THUS SPC7 AND OF7 TITLES ARE NOT USED.

A

B

C

D

E

F

G

H

H

A

B

C

D

E

F

G

HW

H

SD-32374-01-D4

ISSUE
7B

NUMBER NETWORK AND
IDENTIFIER CIRCUIT

2

SD-32374-01-D4

BELL TELEPHONE LABORATORIES
INCORPORATED

DWG SIZE
6S

PRINTED IN U. S. A.

0 1 2 3 4 5 6 7 8 9

CROSS-CONNECTING INFORMATION NOTES:

401. (MFR DISC) SEE NOTE 413

NUMBER TREATMENT		
LINE CATEGORY	CONN TERM.	TO TERM.
PBX BILLING NUMBER	NT-	R
NUMBER ASSOCIATED WITH PBX BILLING NUMBER WITHOUT PILOT NUMBER BILLING	NT-	R
NUMBER ASSOCIATED WITH INDIVIDUAL LINES	NT-	R
RING PARTY NUMBER ON 2 PARTY LINES	NT-	R
TIP PARTY NUMBER ON 2 PARTY FLAT RATE LINES	NT-	T
TIP PARTY NUMBER ON 2 PARTY MESSAGE RATE LINES	NT-	R
ALL MULTI PARTY LINES	NT-	OI
OTHER NUMBERS REQUIRING OPERATOR IDENTIFICATION	NT-	OI
NUMBERS ASSOCIATED WITH AUXILIARY LINES WHERE PILOT NUMBER BILLING IS REQUIRED	SEE NOTE 402	

SEE NOTES 205 & 411

402. FOR NUMBERS ASSOCIATED WITH AUXILIARY LINES WHERE PILOT NUMBER BILLING IS REQUIRED MULTIPLE THE NT-, C-, AND D-PUNCHINGS OF THE AUXILIARY NUMBER TO THE NT-, C-, AND D-PUNCHINGS OF THE PILOT NUMBER. AUXILIARY NUMBER AND PILOT NUMBER MUST BE ON THE SAME NUMBER NETWORK FRAME.

403. SP PUNCHINGS A & B ARE PROVIDED TO BE USED ON INDIVIDUAL LINES ONLY, WHERE SPECIAL TREATMENT IS DESIRED. THEIR USE WILL BE DETERMINED BY THE TELEPHONE COMPANY. WHEN USED NT- CONNECTS TO SP- RATHER THAN R. AN EXAMPLE OF A SPECIAL TREATMENT IS AIOD.

404. ALL NUMBERS EXCEPT THOSE ASSOCIATED WITH AUXILIARY LINES WITH PILOT NUMBER BILLING.

TENS	
CONN TERM.	TO TERM.
D00-09	T0
D10-19	T1
D20-29	T2
D30-39	T3
D40-49	T4
D50-59	T5
D60-69	T6
D70-79	T7
D80-89	T8
D90-99	T9

SEE NOTE 205

405. ALL NUMBERS EXCEPT THOSE ASSOCIATED WITH AUXILIARY LINES WITH PILOT NUMBER BILLING.

UNITS	
CONN TERM.	TO TERM.
C00, C10, C20, C30, C40, C50, C60, C70, C80, C90	U0
C01, C11, C21, C31, C41, C51, C61, C71, C81, C91	U1
C02, C12, C22, C32, C42, C52, C62, C72, C82, C92	U2
C03, C13, C23, C33, C43, C53, C63, C73, C83, C93	U3
C04, C14, C24, C34, C44, C54, C64, C74, C84, C94	U4
C05, C15, C25, C35, C45, C55, C65, C75, C85, C95	U5
C06, C16, C26, C36, C46, C56, C66, C76, C86, C96	U6
C07, C17, C27, C37, C47, C57, C67, C77, C87, C97	U7
C08, C18, C28, C38, C48, C58, C68, C78, C88, C98	U8
C09, C19, C29, C39, C49, C59, C69, C79, C89, C99	U9

SEE NOTE 205

CROSS-CONNECTING INFORMATION NOTES (CONT):

406. CROSS CONNECT THL- TO THE THO-9 ASSIGNED TO THE LEFT ONE HUNDRED NUMBER UNIT. CROSS CONNECT THR- TO THE THO-9 ASSIGNED TO THE RIGHT ONE HUNDRED NUMBER UNIT. SEE NOTE 411.
407. CROSS CONNECT HL- TO THE HO-9 ASSIGNED TO THE LEFT ONE HUNDRED NUMBER UNIT. CROSS CONNECT HR- TO THE HO-9 ASSIGNED TO THE RIGHT ONE HUNDRED NUMBER UNIT. SEE NOTE 411.

408. SERVICE MARKS O-10 ARE TO BE ASSIGNED BY THE TELEPHONE COMPANY.

CONN TERM.	TO TERM.
TL	SERVICE MARK ASSIGNED TO TIP PARTY OF OFFICE CODE OF THE LEFT ONE HUNDRED NUMBER UNIT
RL	SERVICE MARK ASSIGNED TO RING PARTY OF OFFICE CODE OF THE LEFT ONE HUNDRED NUMBER UNIT
AL	SERVICE MARK ASSIGNED TO FIRST SPECIAL TREATMENT DESIRED BY SPECIAL LINES IN THE LEFT ONE HUNDRED NUMBER UNIT
BL	SERVICE MARK ASSIGNED TO SECOND SPECIAL TREATMENT DESIRED BY SPECIAL LINES IN THE LEFT ONE HUNDRED NUMBER UNIT
TR	SERVICE MARK ASSIGNED TO TIP PARTY OF OFFICE CODE OF THE RIGHT ONE HUNDRED NUMBER UNIT
RR	SERVICE MARK ASSIGNED TO RING PARTY OF OFFICE CODE OF THE RIGHT ONE HUNDRED NUMBER UNIT
AR	SERVICE MARK ASSIGNED TO FIRST SPECIAL TREATMENT DESIRED BY SPECIAL LINES IN THE RIGHT ONE HUNDRED NUMBER UNIT
BR	SERVICE MARK ASSIGNED TO SECOND SPECIAL TREATMENT DESIRED BY SPECIAL LINES IN THE RIGHT ONE HUNDRED NUMBER UNIT

SEE NOTE 411 & 416

SERVICE MARKS		CONN TERM.	TO TERM.
FIRST SERVICE MARK ASSIGNED TO RING PARTY NUMBERS	SMA-	RA	
SECOND SERVICE MARK ASSIGNED TO RING PARTY NUMBERS	SMA-	RB	
THIRD SERVICE MARK ASSIGNED TO RING PARTY NUMBERS	SMA-	RC	
FOURTH SERVICE MARK ASSIGNED TO RING PARTY NUMBERS	SMA-	RD	
FIRST SERVICE MARK ASSIGNED TO TIP PARTY NUMBERS	SMA-	TA	
SECOND SERVICE MARK ASSIGNED TO TIP PARTY NUMBERS	SMA-	TB	
THIRD SERVICE MARK ASSIGNED TO TIP PARTY NUMBERS	SMA-	TC	
FOURTH SERVICE MARK ASSIGNED TO TIP PARTY NUMBERS	SMA-	TD	
ALL OTHER SERVICE MARKS	NO CONN		

SEE NOTE 411.

410. FOR ONE WAY ORIGINATING LINES WITH FIRST NUMBER BILLING MULTIPLE THE NT-, C-, AND D-PUNCHINGS OF THE NUMBER NETWORK FOR ONE WAY ORIGINATING LINES TO THE NT-, C-, AND D-PUNCHINGS OF THE BILLING NUMBER. THE ONE WAY ORIGINATING LINE NETWORK MUST BE ON THE SAME NUMBER NETWORK FRAME AS THE BILLING NUMBER NETWORK.

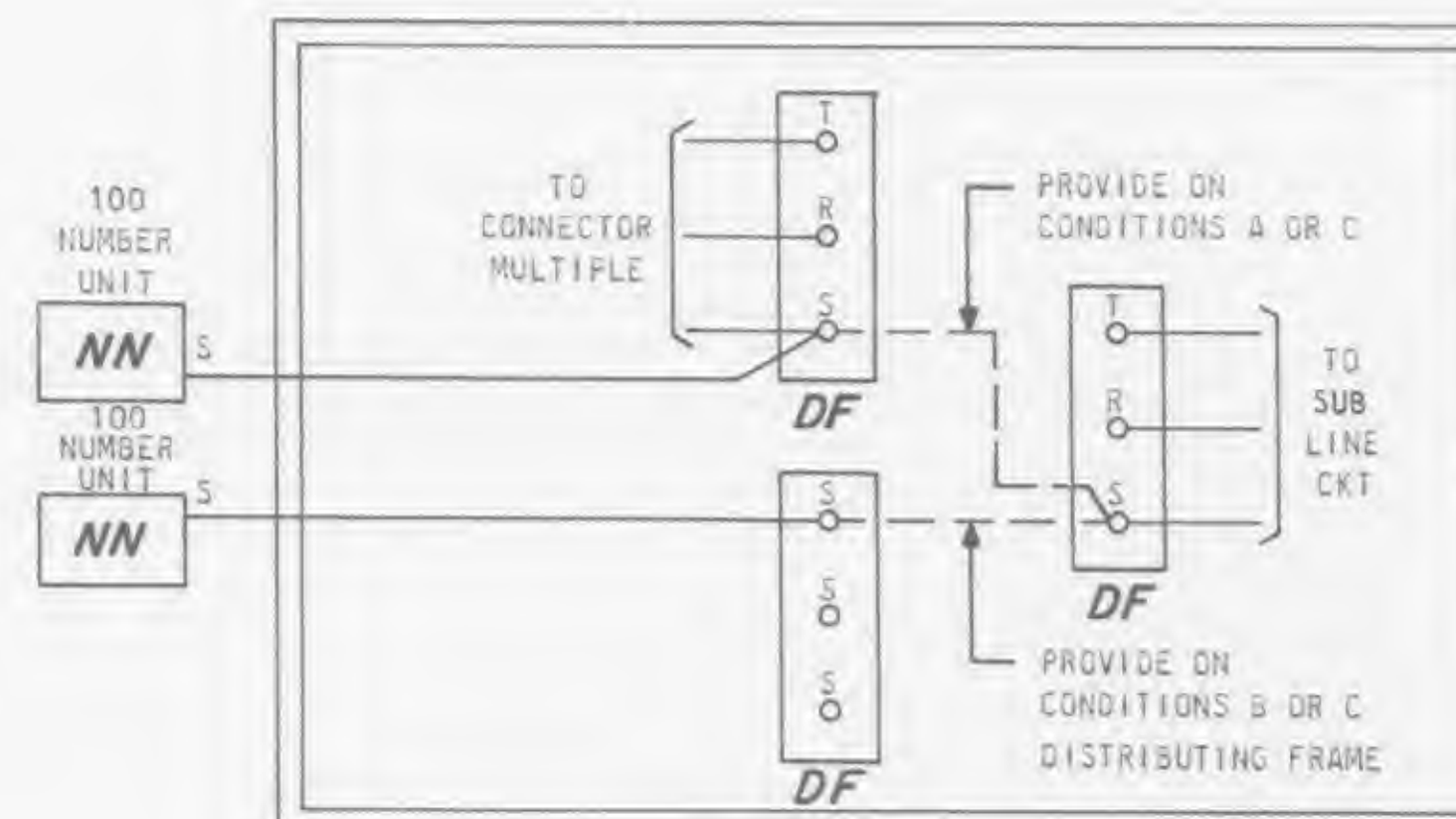
411. J38941 CROSS CONN DETAILS:

CROSS CONN LOCATION AND DESIGNATION			
CROSS CONN WIRE COLOR TO BE USED	TS ON PARTY DISCR UNIT	TS ON 200 NO. NETWORK UNIT	FROM NT TERM. TO NT BUS FIELD UNITS DIGIT OF SUB TEL NO.
WHITE	RA	THL, THR	0
BLACK	RB	HL, HR	1
RED	RC	TL, TR	2
BROWN	RD	RL, RR	3
GREEN		AL, AR, BL, BR	4
WHITE	TA		5
BLACK	TB		6
RED	TC		7
BROWN	TD		8
GREEN			9

24 BU WIRE FOR ALL CROSS CONNECTIONS.

CROSS-CONNECTING INFORMATION NOTES (CONT):

412. TYPICAL DISTRIBUTING FRAME CONNECTIONS FOR PBX AIOD.



CONDITION	
A	WHEN AN AIOD TRUNK HANDLING TWO WAY TRAFFIC IS USED AND THE CONNECTOR TERMINAL NUMBER CAN SATISFY THE AIOD TRUNK NUMBER REQUIREMENT.
B	WHEN AN AIOD TRUNK HANDLING ONE WAY ORIGINATING TRAFFIC ONLY IS USED.
C	WHEN AN AIOD TRUNK HANDLING TWO WAY TRAFFIC IS USED AND THE CONNECTOR TERMINAL NUMBER CANNOT SATISFY THE AIOD TRUNK NUMBER REQUIREMENT. AT THE NUMBER NETWORK ASSOCIATED WITH THE CONNECTOR MULTIPLE, REMOVE THE FACTORY INSTALLED STRAPS AT THE C- AND D-PUNCHINGS.

NUMBER TREATMENT		ANI	ANTI-AMARS
LINE CATEGORY	CONN TERM.	TO TERM.	TO TERM.
PBX BILLING NUMBER	ANI ONLY	R	
	ANI-AMARS MEASURED	NT-	IM
	ANI-AMARS FLAT		IF
NUMBER ASSOCIATED WITH PBX BILLING NUMBER WITHOUT PILOT NUMBER BILLING	ANI ONLY	R	
	ANI-AMARS MEASURED	NT-	IM
	ANI-AMARS FLAT		IF
NUMBER ASSOCIATED WITH INDIVIDUAL LINES	ANI ONLY	R	
	ANI-AMARS MEASURED	NT-	IM
	ANI-AMARS FLAT		IF
RING PARTY NUMBER ON 2 PARTY LINES	NT-	R	2PR
TIP PARTY NUMBER ON 2 PARTY FLAT RATE LINE	NT-	T	2PT
TIP PARTY NUMBER ON 2 PARTY MESSAGE RATE LINE	NT-	R	2PR
ALL MULTI-PARTY LINES	NT-	OI	OI
OTHER NUMBERS REQUIRING OPERATOR IDENTIFICATION	NT-	OI	OI
NUMBERS ASSOCIATED WITH AUXILIARY LINES WHERE PILOT NUMBER BILLING IS REQUIRED	SEE NOTE 402		

SEE NOTES 205 AND 416

414. SP PUNCHINGS A AND B ARE PROVIDED TO BE USED ON INDIVIDUAL LINES ONLY WHERE SPECIAL TREATMENT IS DESIRED. THEIR USE WILL BE DETERMINED BY THE TELEPHONE COMPANY. WHEN USED, NT- CONNECTS TO SP- RATHER THAN R IN THE ANI SYSTEM WHICH HAS BOTH SP PUNCHINGS A AND B. IN AN ANI-AMARS SYSTEM, ONLY SP PUNCHING A IS AVAILABLE. AN EXAMPLE OF A SPECIAL TREATMENT IS AIOD.

CROSS-CONNECTING INFORMATION NOTES (CONT):

415. SERVICE MARKS O-10 ARE TO BE ASSIGNED BY THE TELEPHONE COMPANY.

CONNECT TERMINAL IN	TO TERMINAL OF SERVICE MARK ASSIGNED TO
TL 2PTL	TIP PARTY OF OFFICE CODE OF THE LEFT ONE HUNDRED NUMBER UNIT
RL 2PRL	RING PARTY OF OFFICE CODE OF THE LEFT ONE HUNDRED NUMBER UNIT
AL AL	FIRST SPECIAL TREATMENT DESIRED BY SPECIAL LINES IN THE LEFT ONE HUNDRED NUMBER UNIT
BL	SECOND SPECIAL TREATMENT DESIRED BY SPECIAL LINES IN THE LEFT ONE HUNDRED NUMBER UNIT
* IML	INDIVIDUAL PARTIES OF AMARS OFFICE CODE REQUESTING ANI-AMARS MEASURED RATE SERVICE IN THE LEFT ONE HUNDRED NUMBER UNIT
* IFL	INDIVIDUAL PARTIES OF AMARS OFFICE CODE REQUESTING ANI-AMARS FLAT RATE SERVICE IN THE LEFT ONE HUNDRED NUMBER UNIT
TR 2PTR	TIP PARTY OF OFFICE CODE OF THE RIGHT ONE HUNDRED NUMBER UNIT
RR 2PRR	RING PARTY OF OFFICE CODE OF THE RIGHT ONE HUNDRED NUMBER UNIT
AR AR	FIRST SPECIAL TREATMENT DESIRED BY SPECIAL LINES IN THE RIGHT ONE HUNDRED NUMBER UNIT
BR	SECOND SPECIAL TREATMENT DESIRED BY SPECIAL LINES IN THE RIGHT ONE HUNDRED NUMBER UNIT
* IMR	INDIVIDUAL PARTIES OF AMARS OFFICE CODE REQUESTING ANI-AMARS MEASURED RATE SERVICE IN THE RIGHT ONE HUNDRED NUMBER UNIT
* IFR	INDIVIDUAL PARTIES OF AMARS OFFICE CODE REQUESTING ANI-AMARS FLAT RATE SERVICE IN THE RIGHT ONE HUNDRED NUMBER UNIT

* THIS SERVICE MARK ONLY DETERMINES AMARS OFFICE CODE

416. J38941 CROSS CONNECTION DETAILS:

CROSS CONN LOCATION AND DESIGNATION				
CROSS CONN WIRE COLOR TO BE USED	TS ON PARTY DISCR UNIT	TS ON ANI 200 NO. NETWORK UNIT	TS ON ANI-AMARS 200 NUMBER NETWORK UNIT	FROM NT TERM. TO NT BUS FIELD UNITS DIGIT OF SUB TEL NO.
WHITE	RA	THL, THR	THL, THR	0
BLACK	RB	HL, HR	HL, HR	1
RED	RC	TL, TR	2PTL, 2PTR	2
BROWN	RD	RL, RR	2PRL, 2PRR	3
GREEN		AL, AR, BL, BR	AL, AR	4
WHITE	TA		IML, IMR	5
BLACK	TB		IFL, IFR	6
RED	TC			7
BROWN	TD			8
GREEN				9

USE 24 BU WIRE FOR ALL CROSS CONNECTIONS. SEE NOTES 205 & 413.

NUMBER NETWORK AND IDENTIFIER CIRCUIT	SD-32374-01-D5
BELL TELEPHONE LABORATORIES INCORPORATED	65

DRAWING
ISSUE
1
RUB
CWD
GM
20
NRC
AFI
GM
MAR
J77
GA
50ISSUE
7B

CROSS-CONNECTING INFORMATION NOTES (CONT):
417. TENS AND UNITS DIGITS CROSS-CONNECTIONS TO DIODE ISOLATION NETWORK

A LEAD	TERM. NO.	B LEAD	TERM. NO.
0	1	0	2
1	3	1	4
2	5	2	6
3	7	3	8
4	9	4	10
5	11	5	12
6	13	6	14
7	15	7	16
8	17	8	18
9	19	9	20

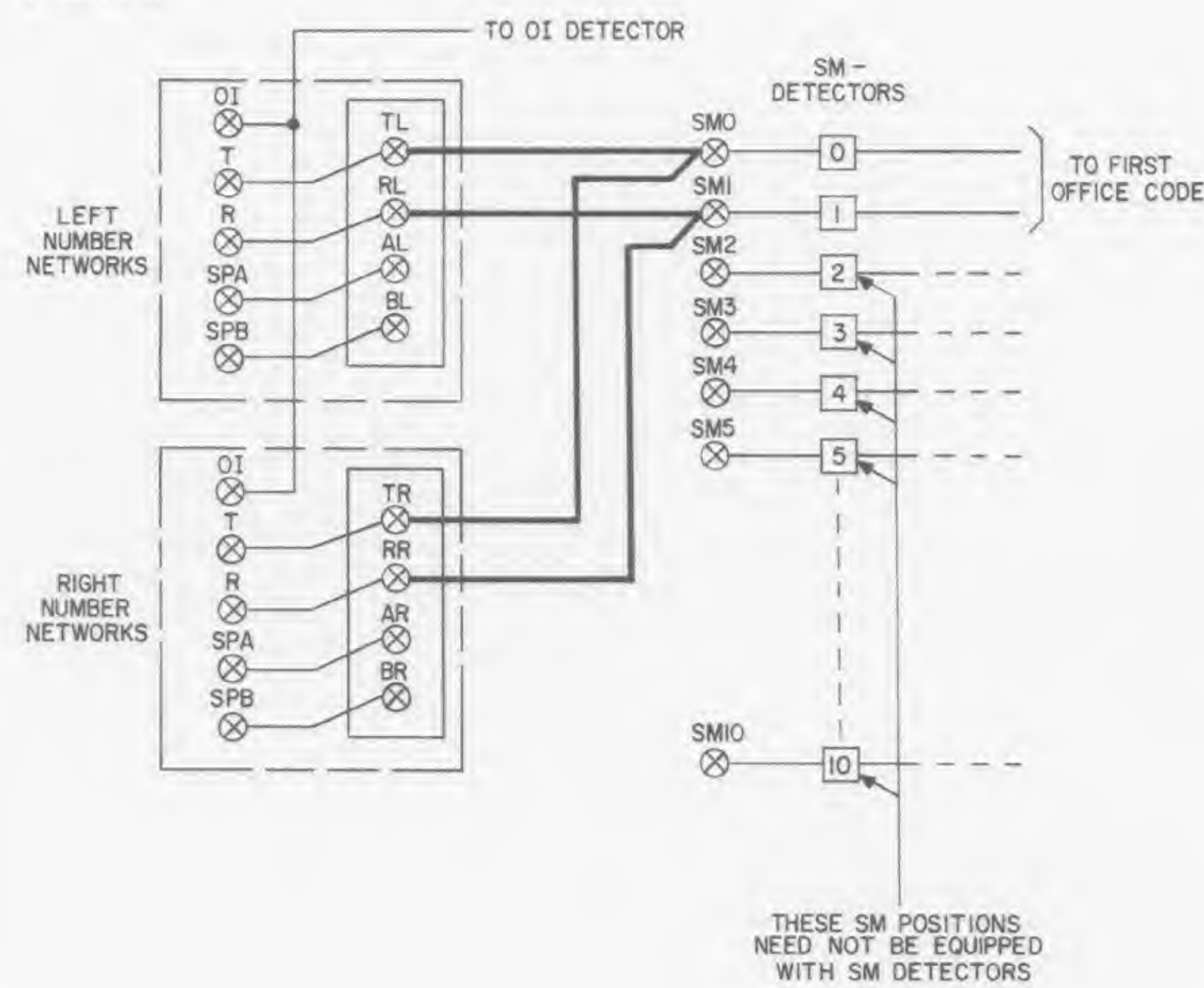
418. THE SPC- MARKS FOR AMARS EACH REPRESENT AN OFFICE CODE USED BY THE CALL DATA ACCUMULATOR TO IDENTIFY A LOCALLY CALLING SUBSCRIBERS OFFICE. THE AMARS OFFICE CODE MAY BE DIFFERENT THAN THE ANI TOLL OFFICE CODE. THE SPC- MARKS USAGE WILL BE DETERMINED BY THE TELEPHONE COMPANY.

419. WHEN THE EXTERNAL AMARS RESISTOR (OPTION X) IS ADDED TO THE DETECTOR, THE TH-H-T-U- AND SM- LEADS FROM THE RESISTOR NETWORKS ARE MOVED FROM PIN 12 ON THE DETECTORS TO PIN 2. THE OI LEAD IS NOT EQUIPPED WITH AN EXTERNAL RESISTOR; THE SO LEAD IS NOT USED (SEE NOTE 107). THE RESISTOR IS MOUNTED BETWEEN TERMINALS 2 AND 12 UNDER OPTION X CONDITIONS.

420. THE NN LEAD SHALL BE CONNECTED TO A PREVIOUSLY UNASSIGNED NUMBER NETWORK, WHICH WILL SERVE AS A DIRECTORY NUMBER FOR AMARS TEST PURPOSES.

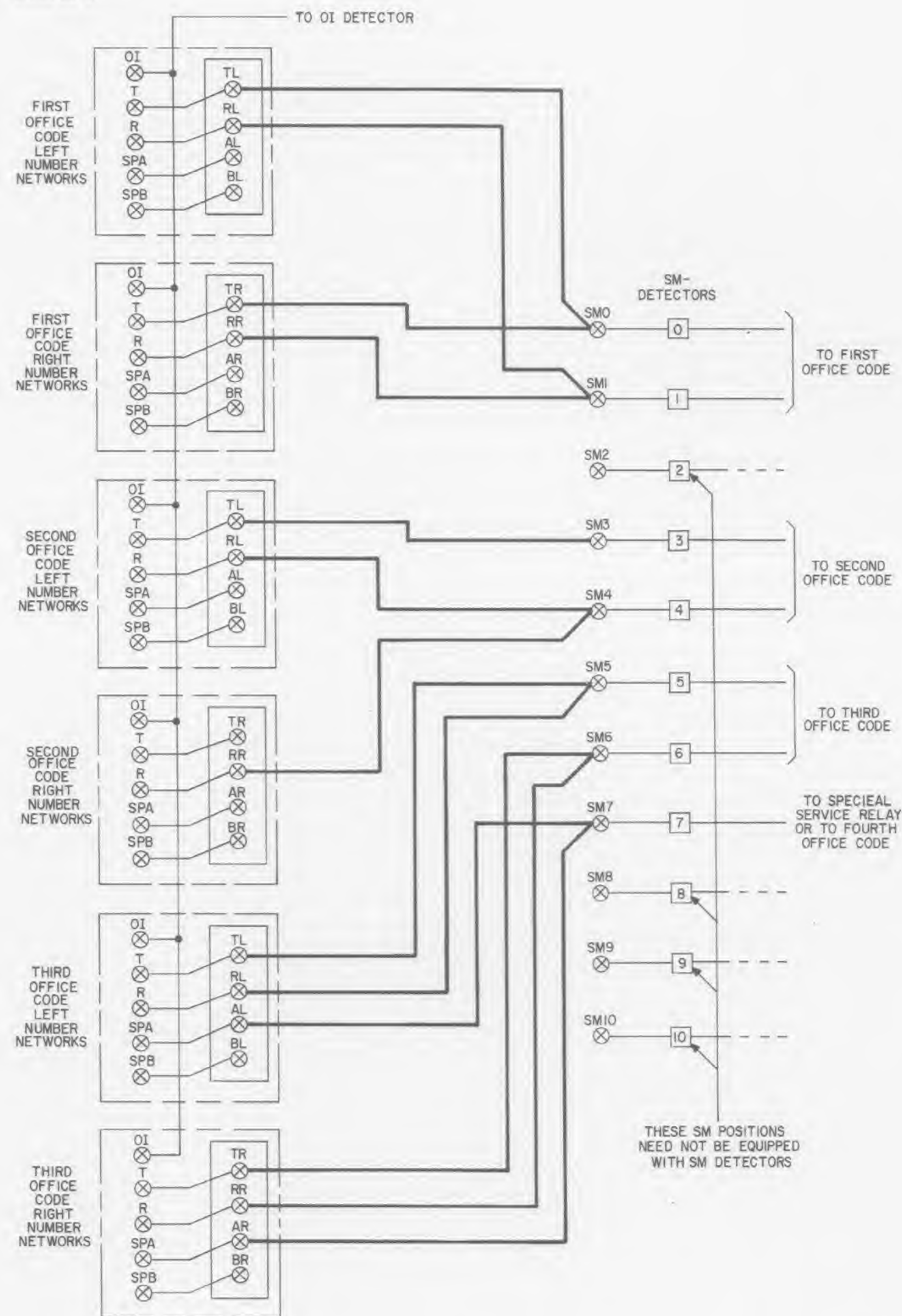
421. SAMPLE NUMBER NETWORK PROGRAMMING IN ANI AND ANI-AMARS SYSTEMS:

EXAMPLE A:



CROSS-CONNECTING INFORMATION NOTES (CONT):
421. (CONT)

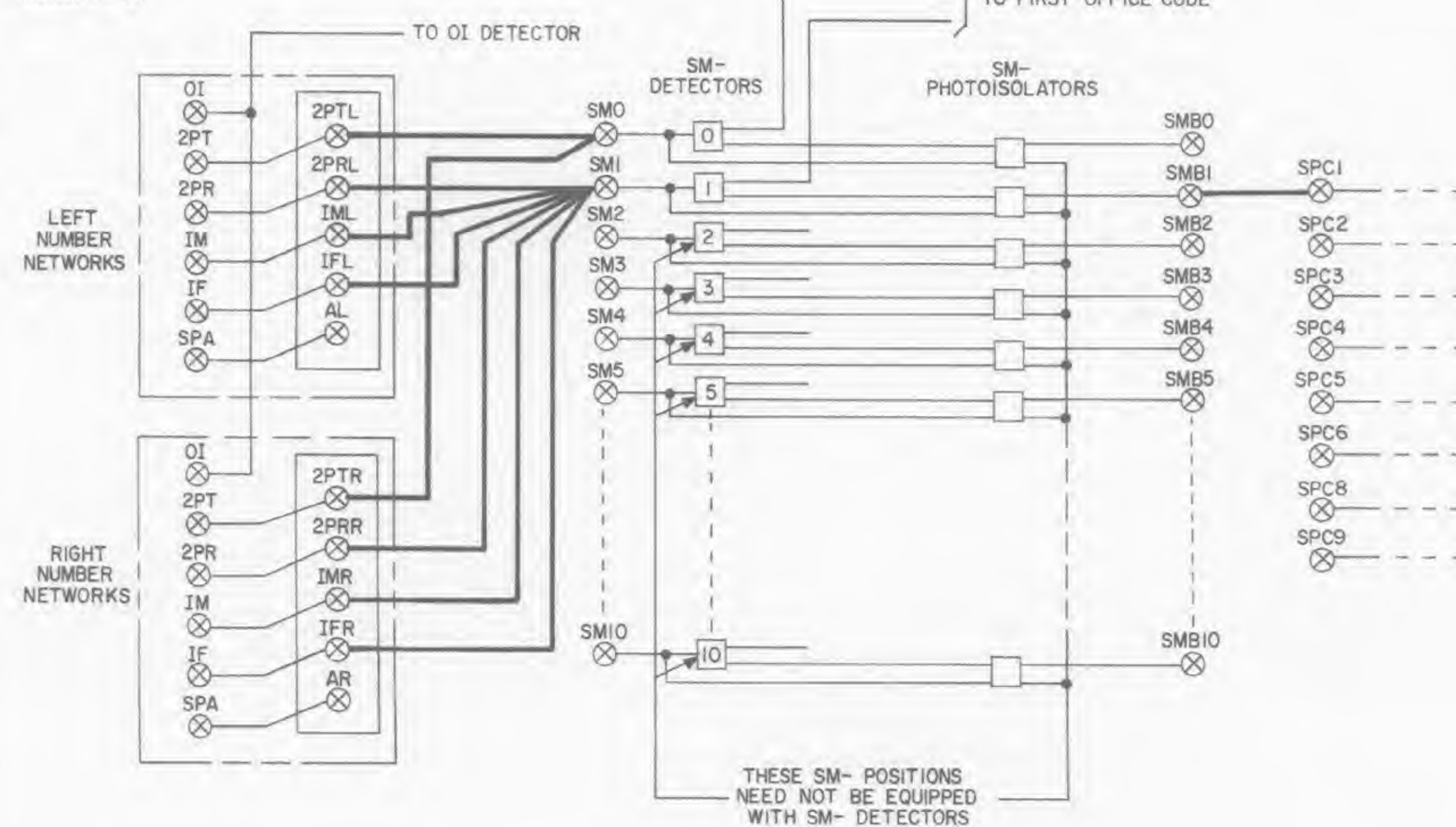
EXAMPLE B:



CROSS-CONNECTING INFORMATION NOTES (CONT):

421.
(CONT)

EXAMPLE C:



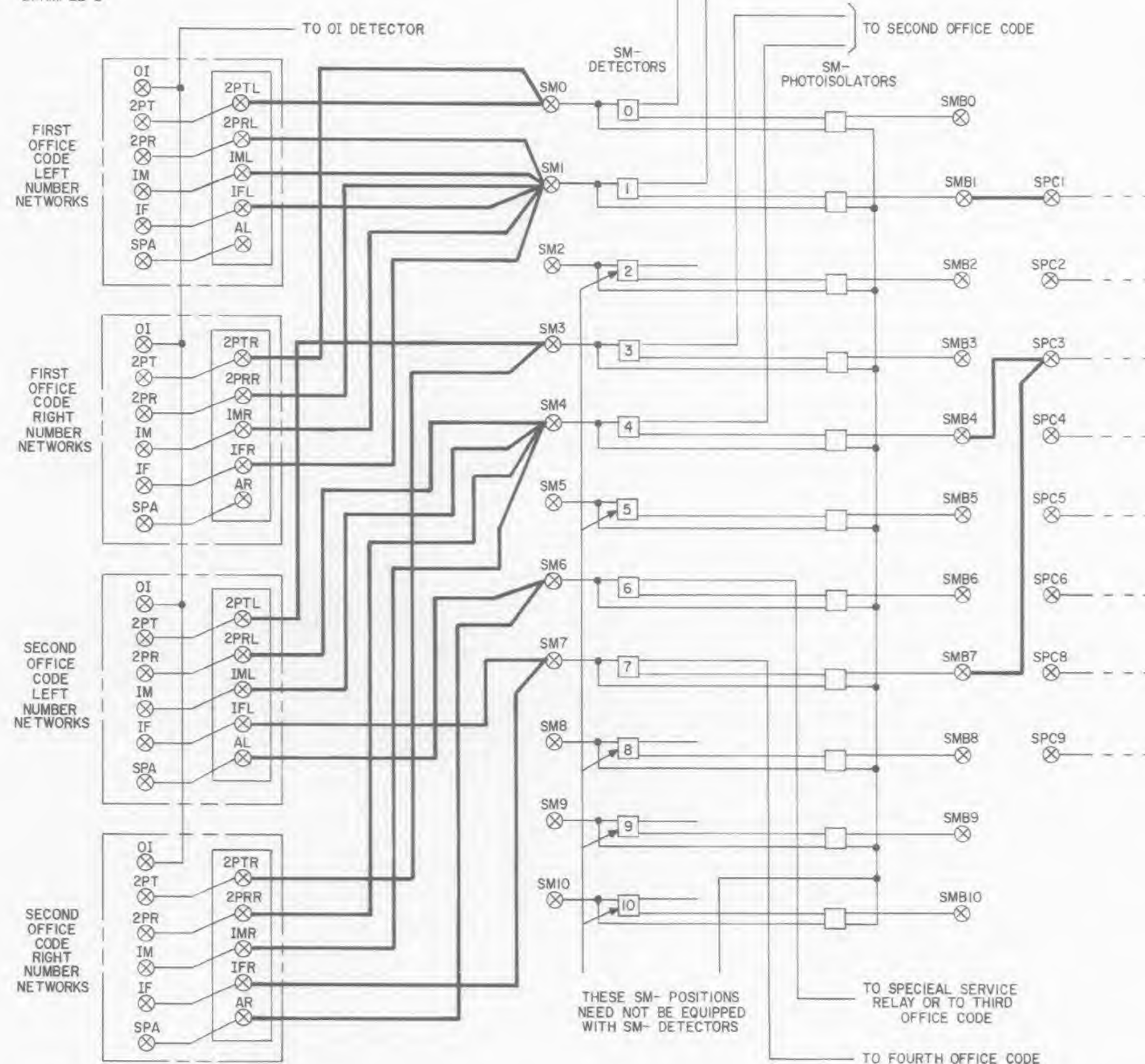
EXAMPLE	NO. OF OFFICE CODES/SYSTEM TYPE	SERVICE REQUIREMENTS		NT- ON NO. NETWORK	ANI S MARKS	AMARS CODE
		OFFICE CODE	DESCRIPTION			
A	1/ANI	1	T, R MULTIPARTY SUBSCRIBERS IN LEFT AND RIGHT NUMBER NETWORKS	TO ONE OFFICE CODE	OI 2PT 2PR IM IF SPA 2PTL 2PRL IML IFL AL	2
B	3/ANI	1	T, R, MULTIPARTY SUBSCRIBERS IN LEFT AND RIGHT NUMBER NETWORKS	TO ONE OFFICE CODE	OI 2PT 2PR IM IF SPA 2PTL 2PRL IML IFL AL	7
		2	R, MULTI IN LEFT AND RIGHT NUMBER NETWORK, ALSO T IN LEFT NO. NET.	TO ONE OFFICE CODE	OI 2PT 2PR IM IF SPA 2PTL 2PRL IML IFL AL	
		3	TIP, RING MULTI-PARTY AND SPECIAL SERVICE IN LEFT AND RIGHT NUMBER NETWORKS	TIP, RING MULTI-PARTY TO ONE OFFICE CODE; SPECIAL TO ONE OFFICE CODE	OI 2PT 2PR IM IF SPA 2PTL 2PRL IML IFL AL	
C	1/ANI-AMARS	1	2 PTY TIP, 2 PTY RING, MULTIPARTY, INDIVIDUAL FLAT, INDIVIDUAL MEASURED IN LEFT AND RIGHT NUMBER NETWORKS	ANI CALLS ALL BILLED TO ONE OFFICE CODE; AMARS CALLS BILLED TO SPC 1	OI 2PT 2PR IM IF SPA 2PTL 2PRL IML IFL AL	2
D	2/ANI-AMARS	1	2 PTY TIP, 2 PTY RING, MULTIPARTY, INDIVIDUAL FLAT, INDIVIDUAL MEASURED IN LEFT AND RIGHT NUMBER NETWORKS	ANI CALLS ALL BILLED TO ONE OFFICE CODE; AMARS CALLS BILLED TO SPC 1	OI 2PT 2PR IM IF SPA 2PTL 2PRL IML IFL AL	6
		2	2 PTY TIP, 2 PTY RING, MULTIPARTY, INDIVIDUAL FLAT, INDIVIDUAL MEASURED, SPECIAL SERVICE IN LEFT AND RIGHT NUMBER NETWORKS	2PT, 2PR, INDIVIDUAL MEASURED TO ONE OFFICE CODE; SPECIAL TO ONE OFFICE CODE; INDIV FLAT TO ONE OFF. CODE; ALL AMARS BILLED TO SPC 3	OI 2PT 2PR IM IF SPA 2PTL 2PRL IML IFL AL	

↑ OR ↓ DENOTES HOW THE AMARS SUBSCRIBERS ARE TOLL BILLED.
THE SYMBOL DENOTES THE ANI SERVICE MARK USED FOR BILLING THESE SUBSCRIBERS.

CROSS-CONNECTING INFORMATION NOTES (CONT):

421.
(CONT)

EXAMPLE D:



422. WHEN THE ROTL IS USED AS A CONNECTING CIRCUIT, THE (S) LEAD FROM THAT CIRCUIT SHOULD BE CONNECTED TO AN (S) LEAD OF A NETWORK FOR ONE WAY ORIGINATING LINES.

NUMBER NETWORK AND
IDENTIFIER CIRCUIT

2

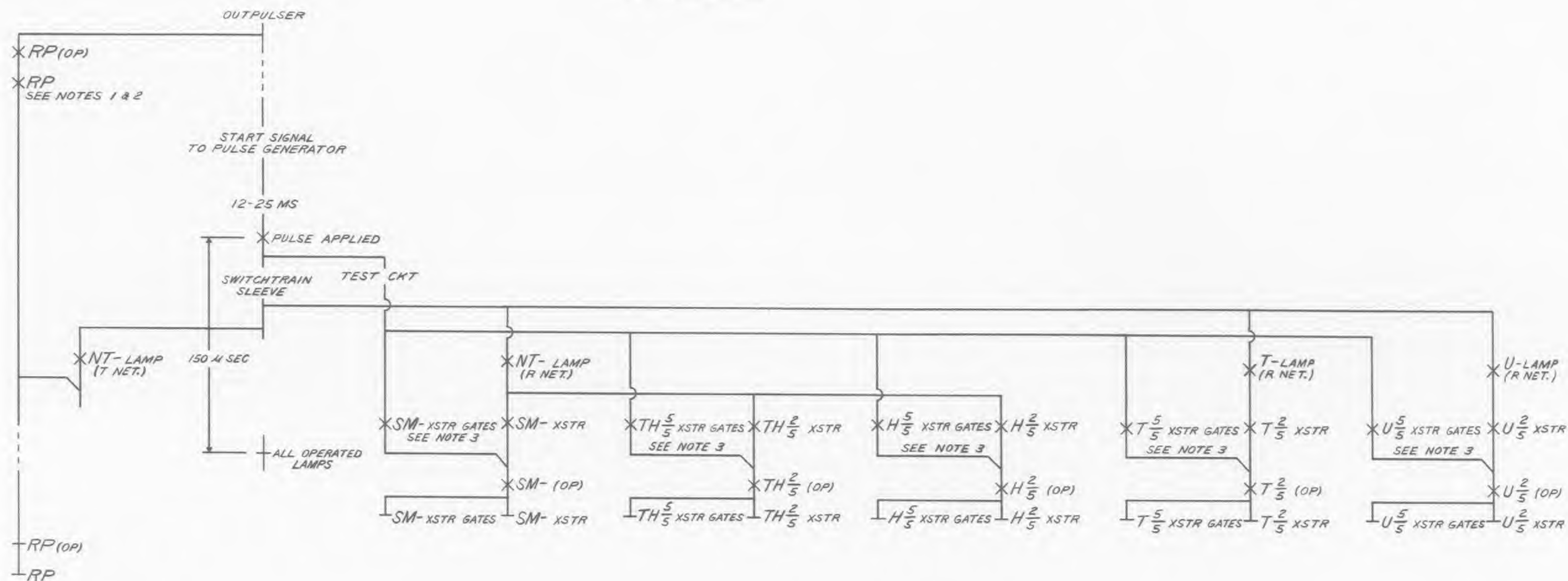
SD-32374-01-D7

BELL TELEPHONE LABORATORIES
INCORPORATED

6S

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SC 1 RING PARTY CALL



NOTES:

1. ON RING PARTY CALL OPERATED (RP) PREVENTS OPERATION OF (T) AND (U) LAMPS OF TIP NETWORK AND (SM-), (TH), AND (H) TRANSISTORS CONNECTED TO TIP NETWORK.
2. ON TIP PARTY CALL (TP) IS OPERATED AND (RP) IS NORMAL, TIP PARTY IS THEN IDENTIFIED.
3. ALL GATE TRANSISTORS OPERATE ON EVERY CALL.

DRAWING
ISSUE
1
RJR
CND
GM

ISSUE
7B

NUMBER NETWORK AND
IDENTIFIER CIRCUIT

2

SD-32374-01-EI

BELL TELEPHONE LABORATORIES
INCORPORATED

6S

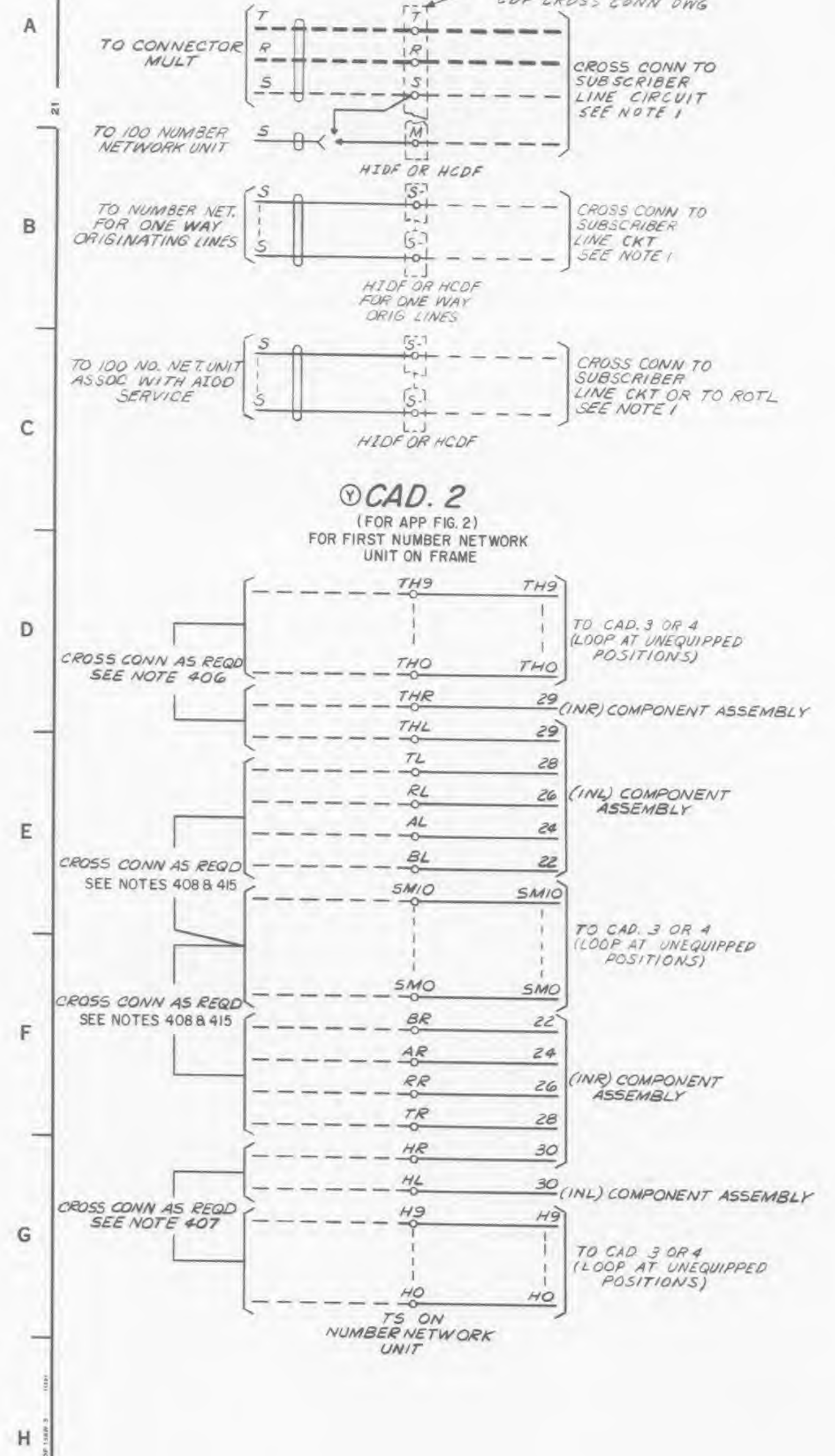
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SD-32374-01-EI

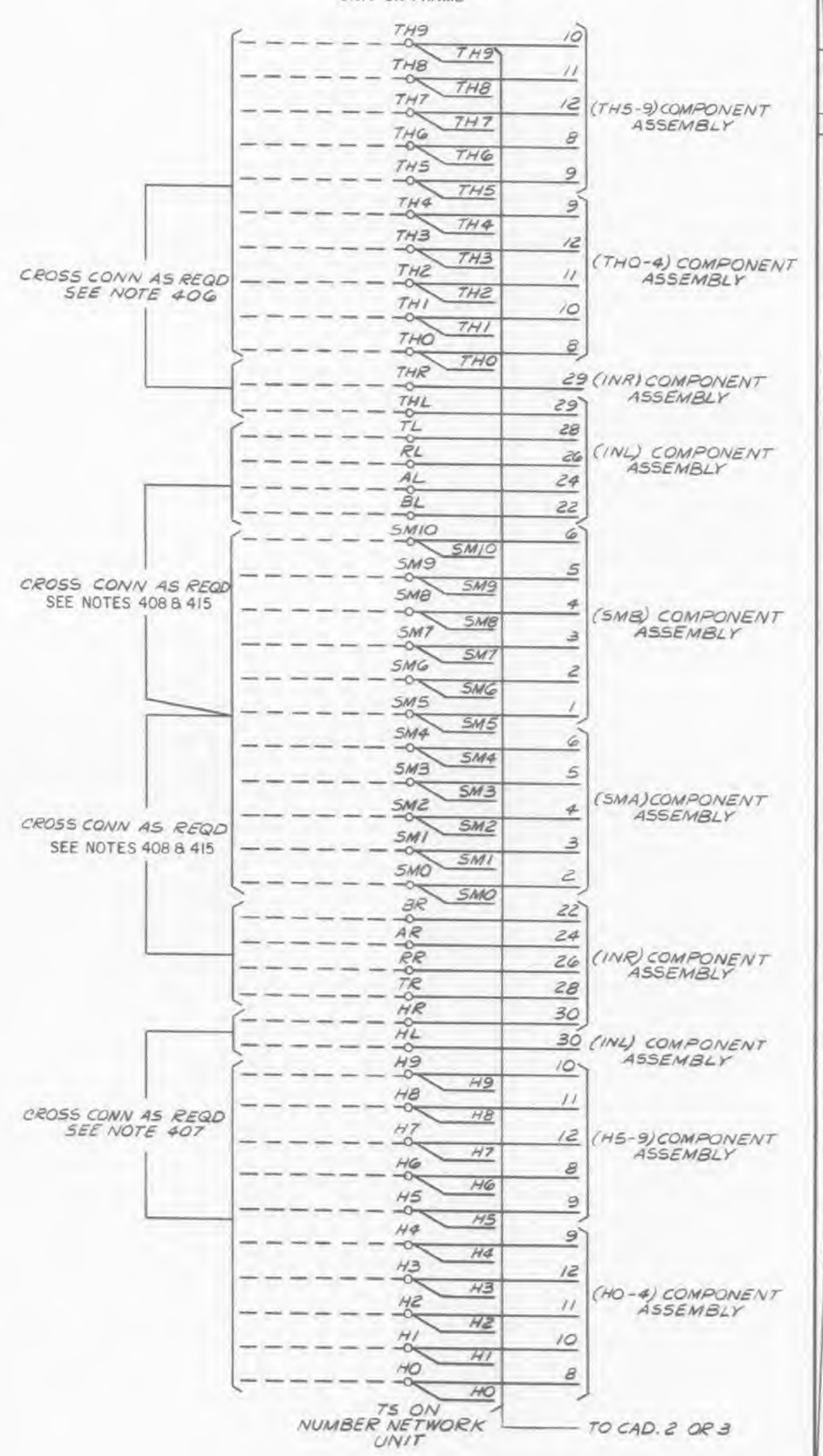
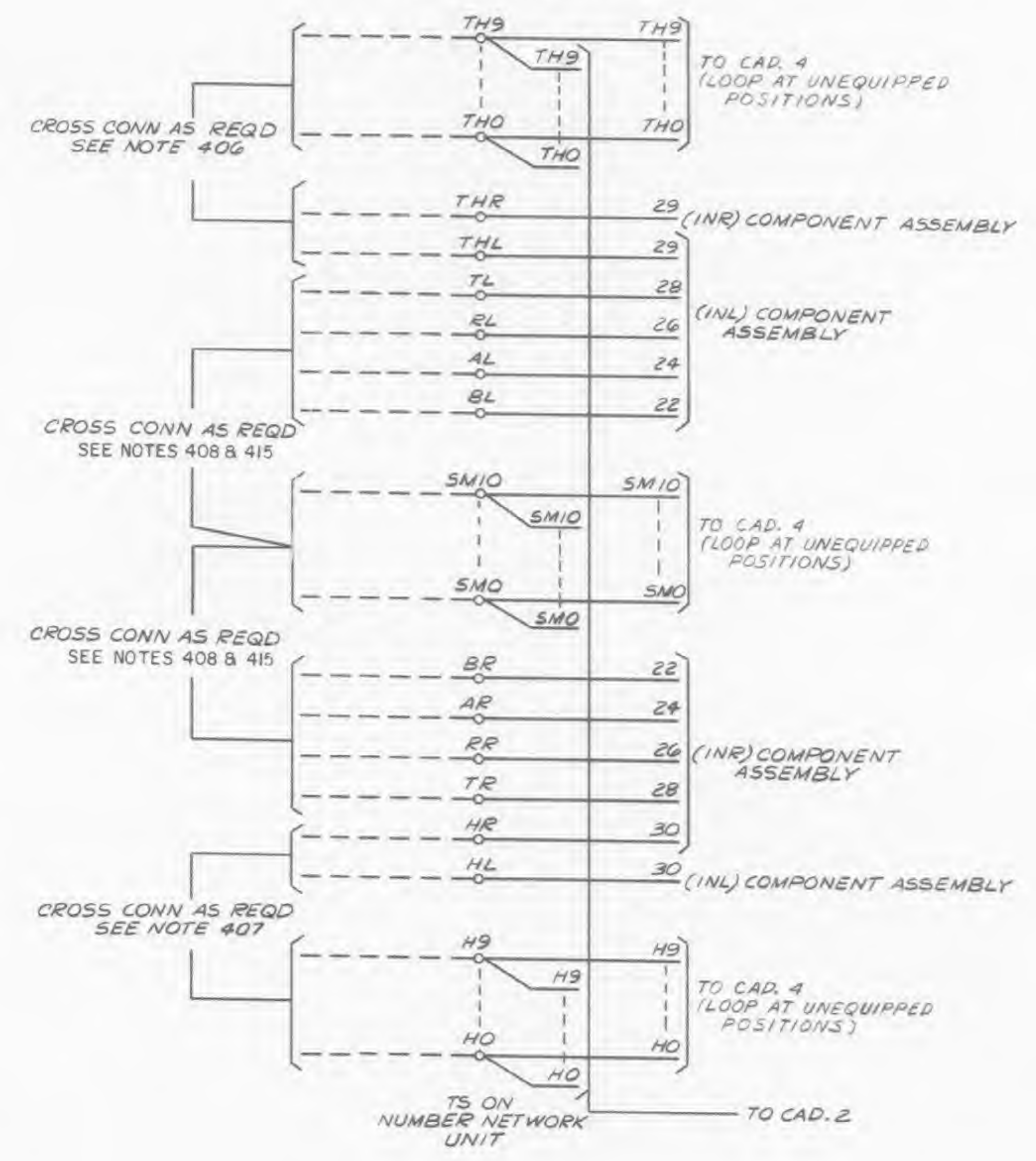
CAD. 1
(FOR APP FIGS. 1 & 6)

CAD. 3
(FOR APP FIG. 2)
FOR INTERMEDIATE NUMBER NETWORK
UNITS ON FRAME

CAD. 4
(FOR APP FIG. 2)
FOR LAST NUMBER NETWORK
UNIT ON FRAME



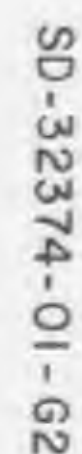
CAD. 2
(FOR APP FIG. 2)
FOR FIRST NUMBER NETWORK
UNIT ON FRAME



SHEET NOTES:
1. FOR TYPICAL DRAWINGS SEE ED-30411-01, ED-30427-06,
ED-30334-02, ED-31133-01, ED-31133-04, ED-31133-05
OR ED-31133-06.

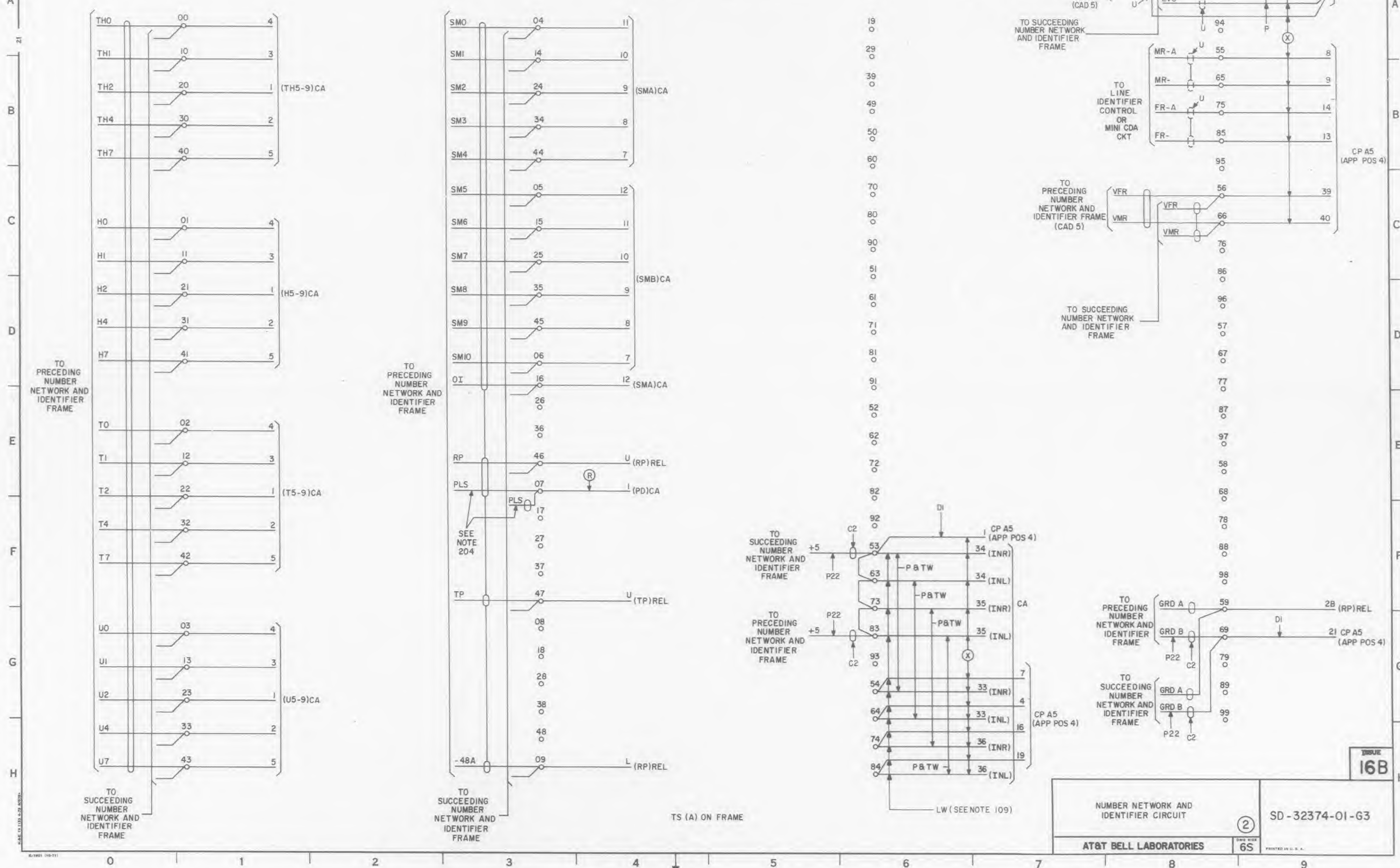
SD-32374-01-G1

(FOR APP FIG. 3.4.5 B.7 (MFR DISC.))
ON FIRST NUMBER NETWORK AND IDENTIFIER FRAME



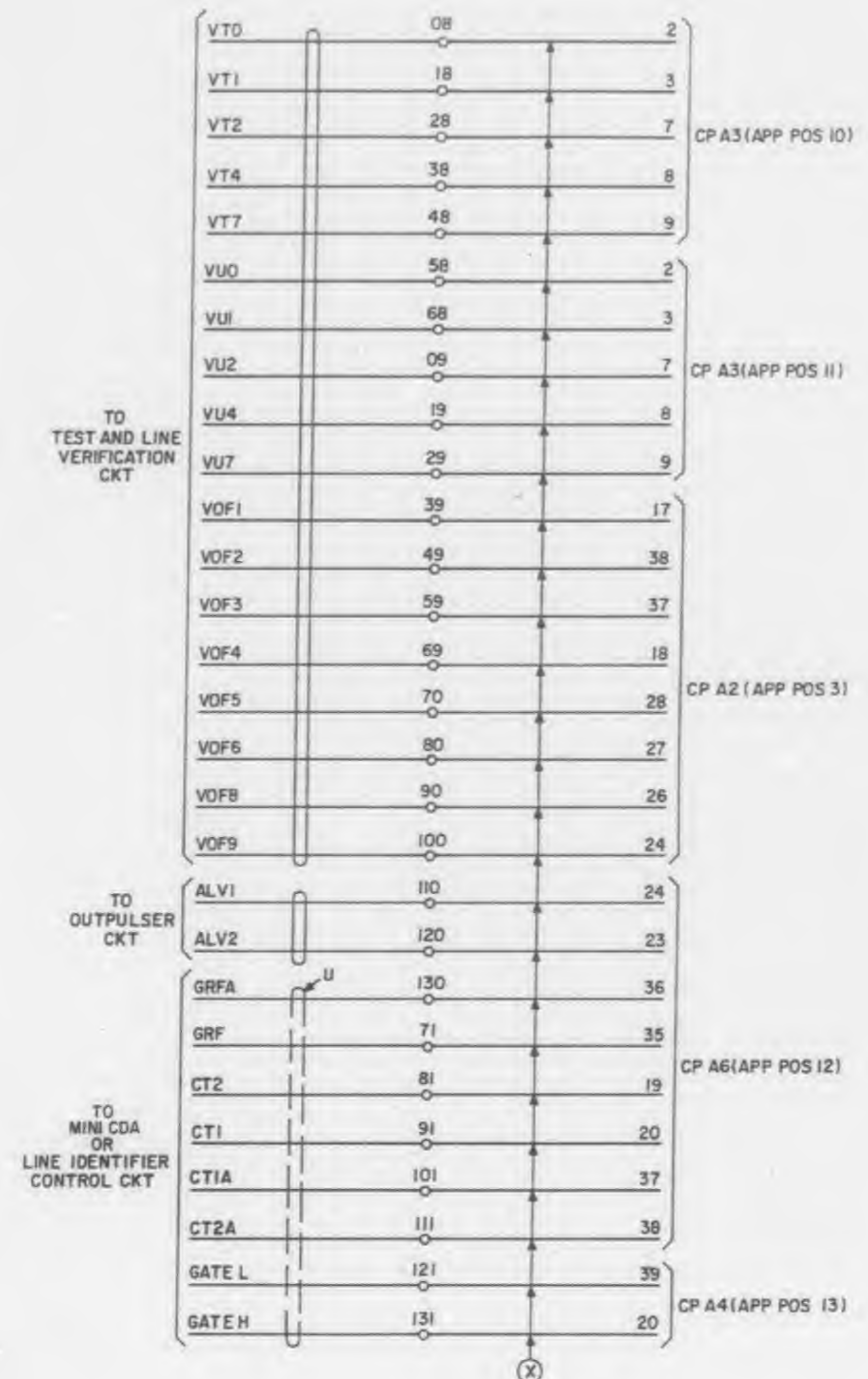
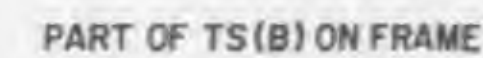
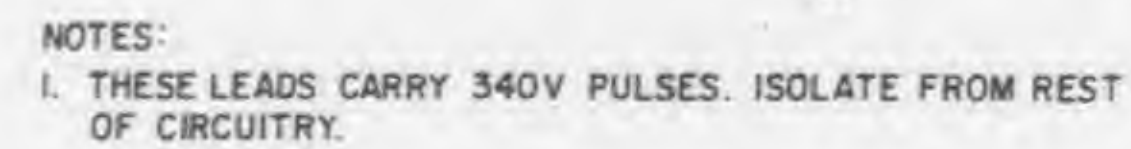
CAD 6

(FOR APP FIG. 3 & 4)
ON ALL NUMBER NETWORK AND IDENTIFIER FRAMES
OTHER THAN FIRST



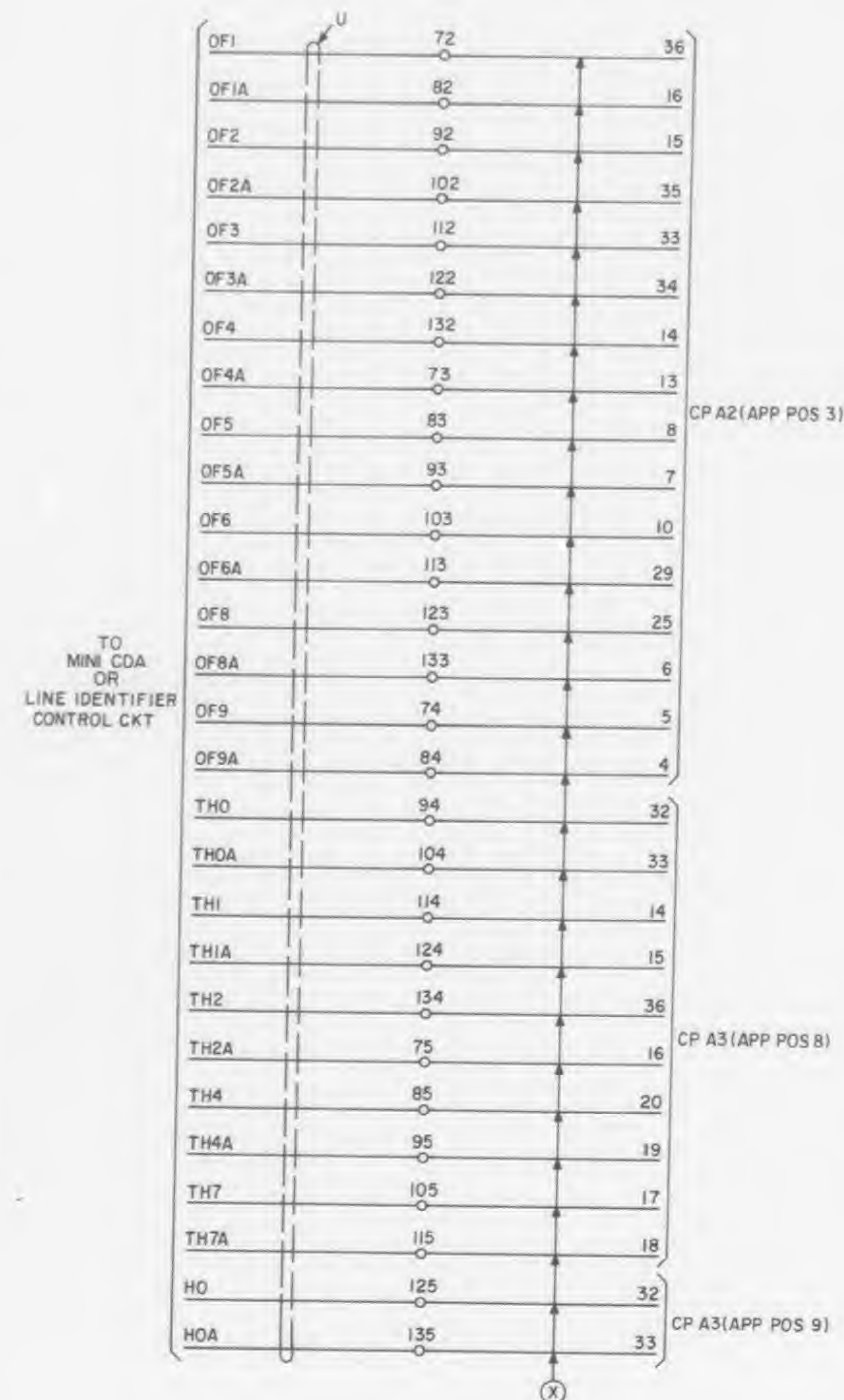
SD-32374-01-G3

(FOR APP FIG. 5B II)
ON FIRST NUMBER NETWORK AND IDENTIFIER FRAME



PART OF CAD 7

(FOR APP FIG. 5 & 11)
ON FIRST NUMBER NETWORK AND IDENTIFIER FRAME



PART OF TS (8) ON FRAME

SD-32374-01-G5

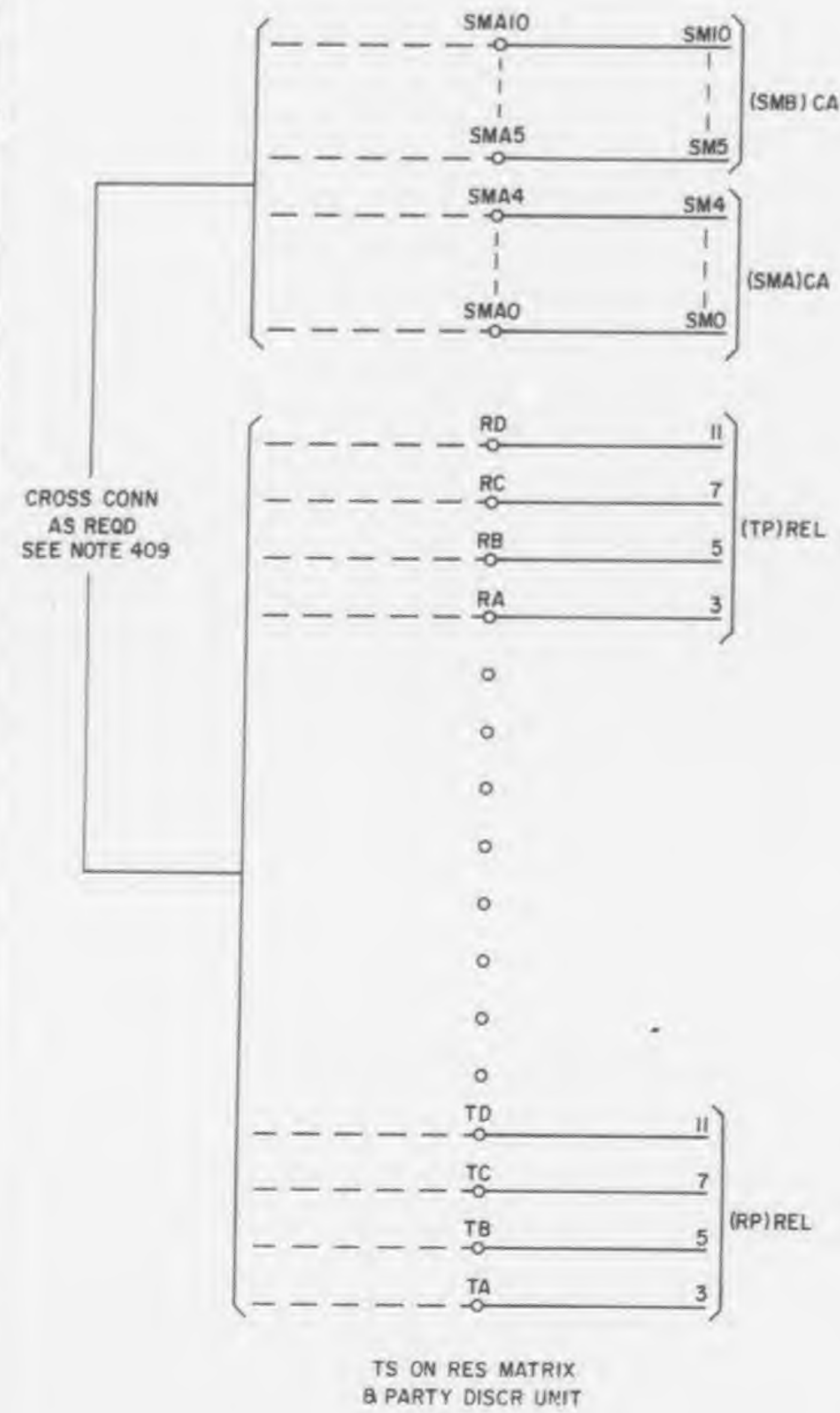
NUMBER NETWORK AND IDENTIFIER CIRCUIT		SD-32374-01-G5
AT&T BELL LABORATORIES		

16B

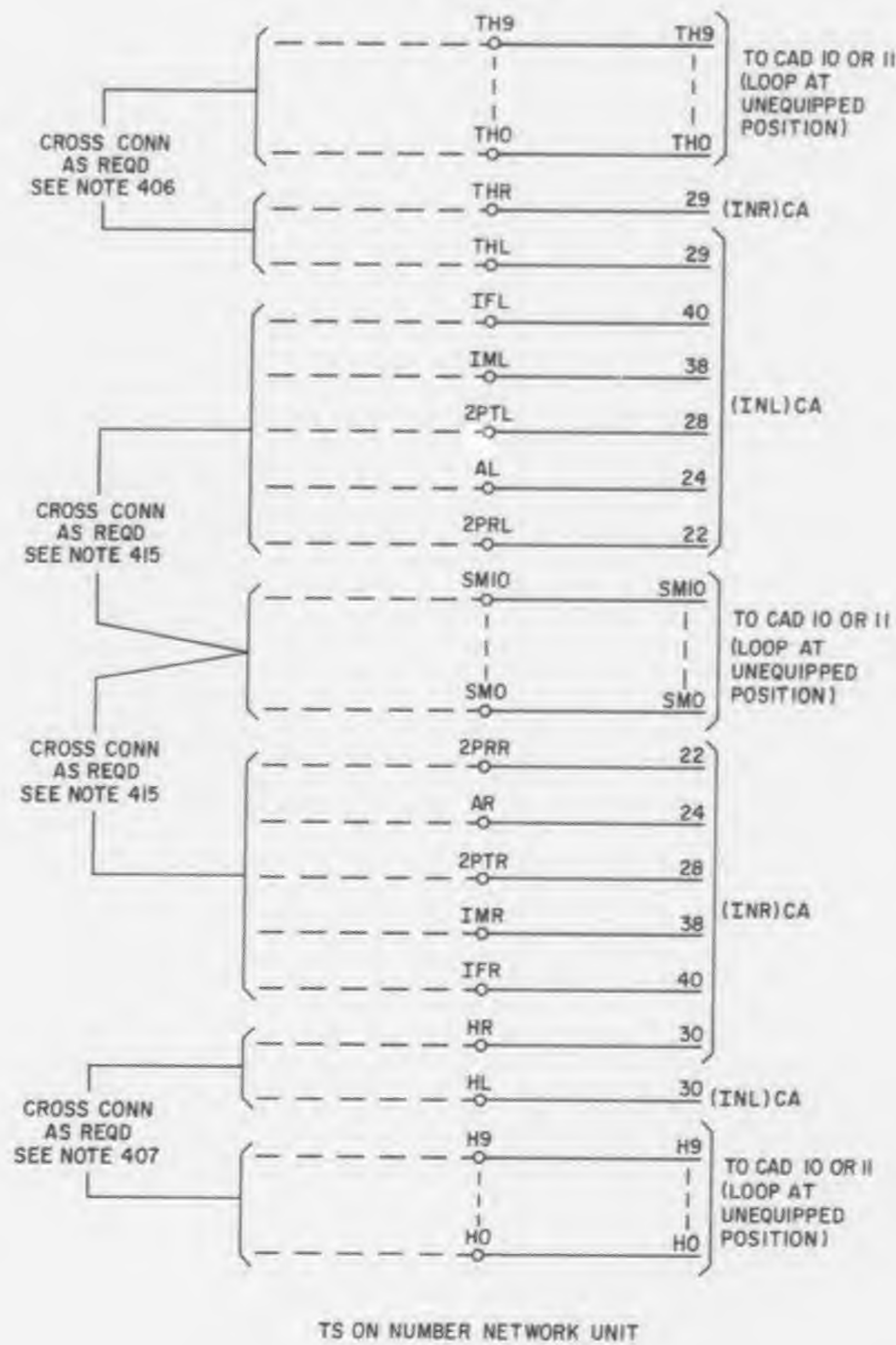
65

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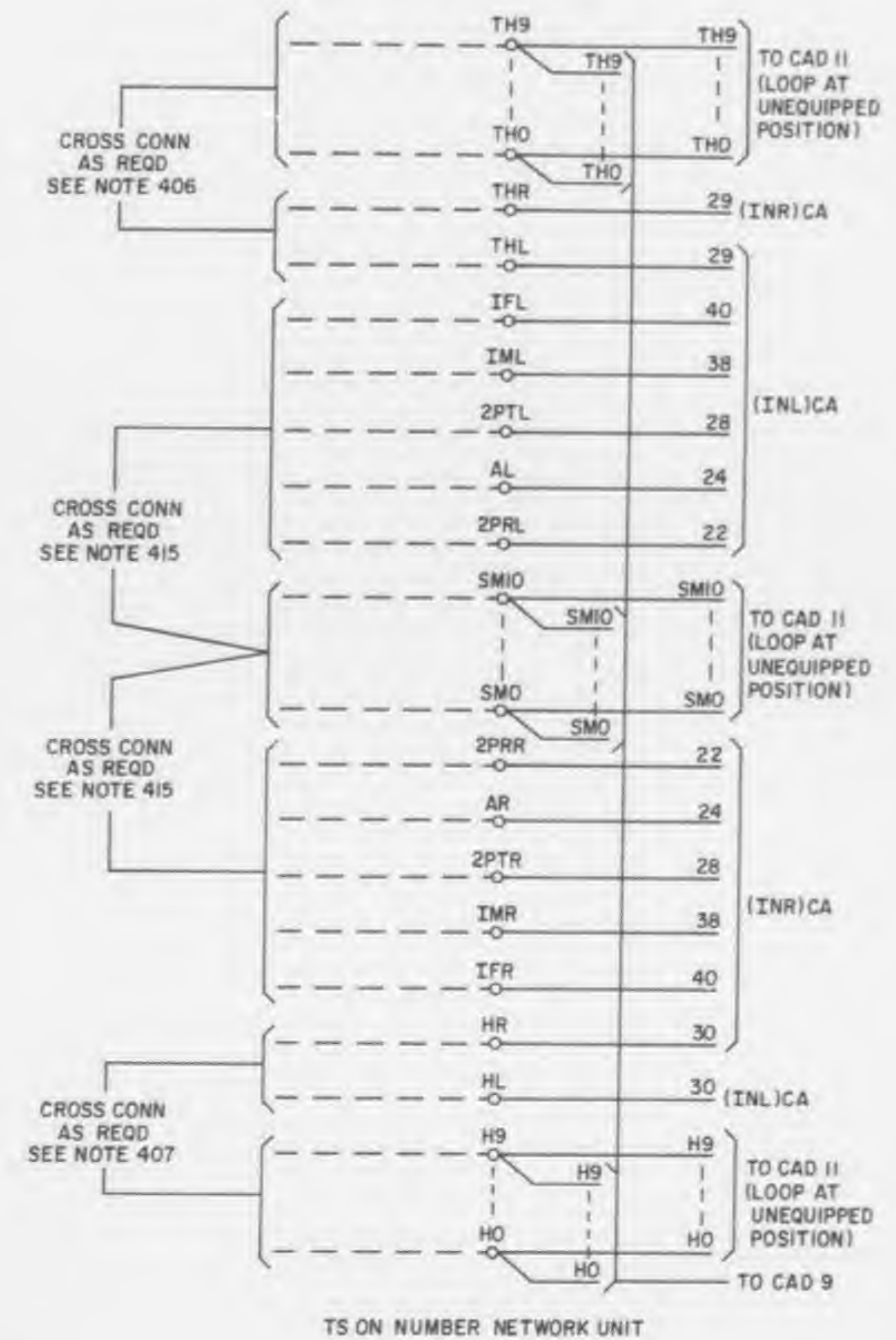
CAD 8 (FOR APP FIG. 3 & 4)



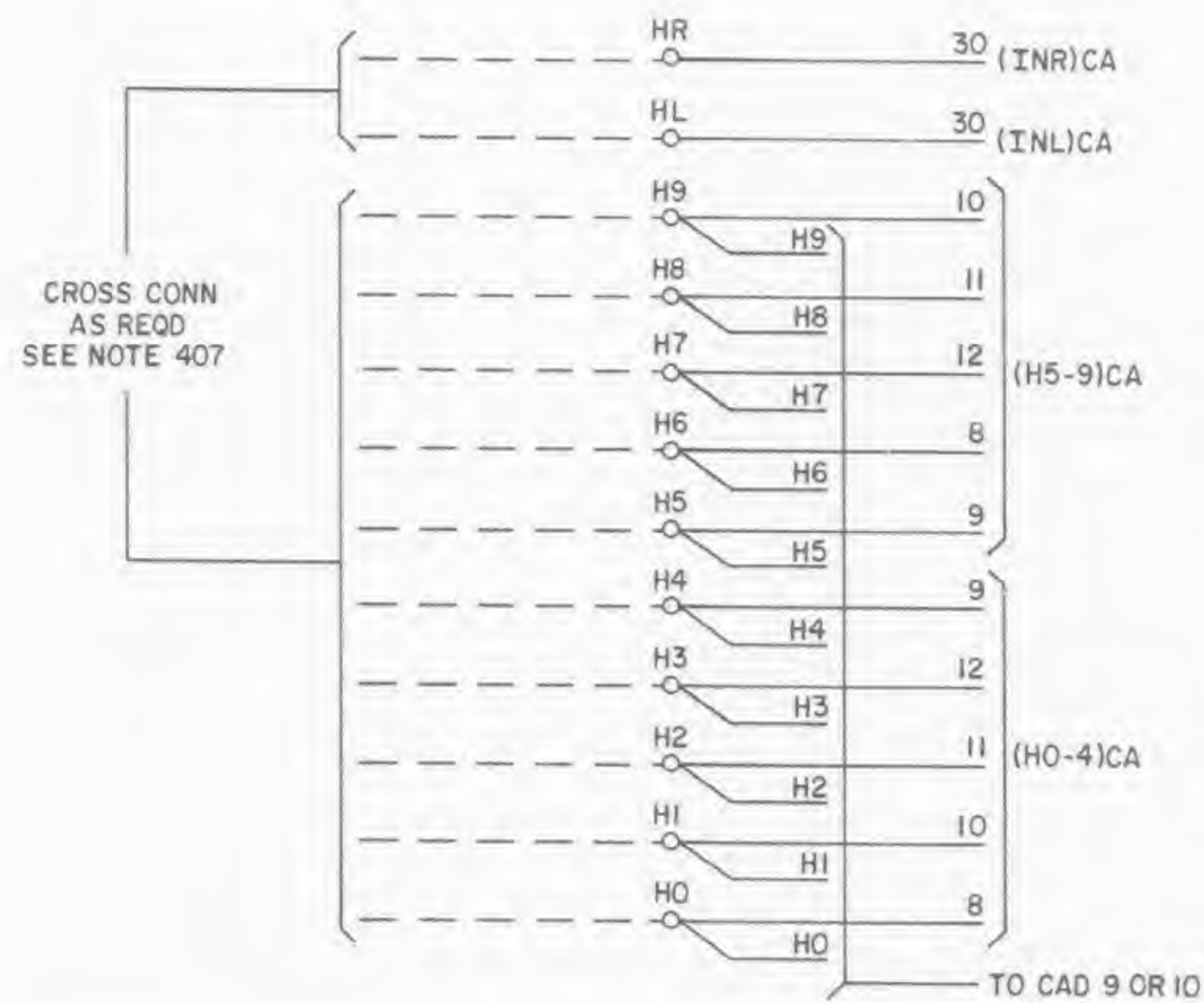
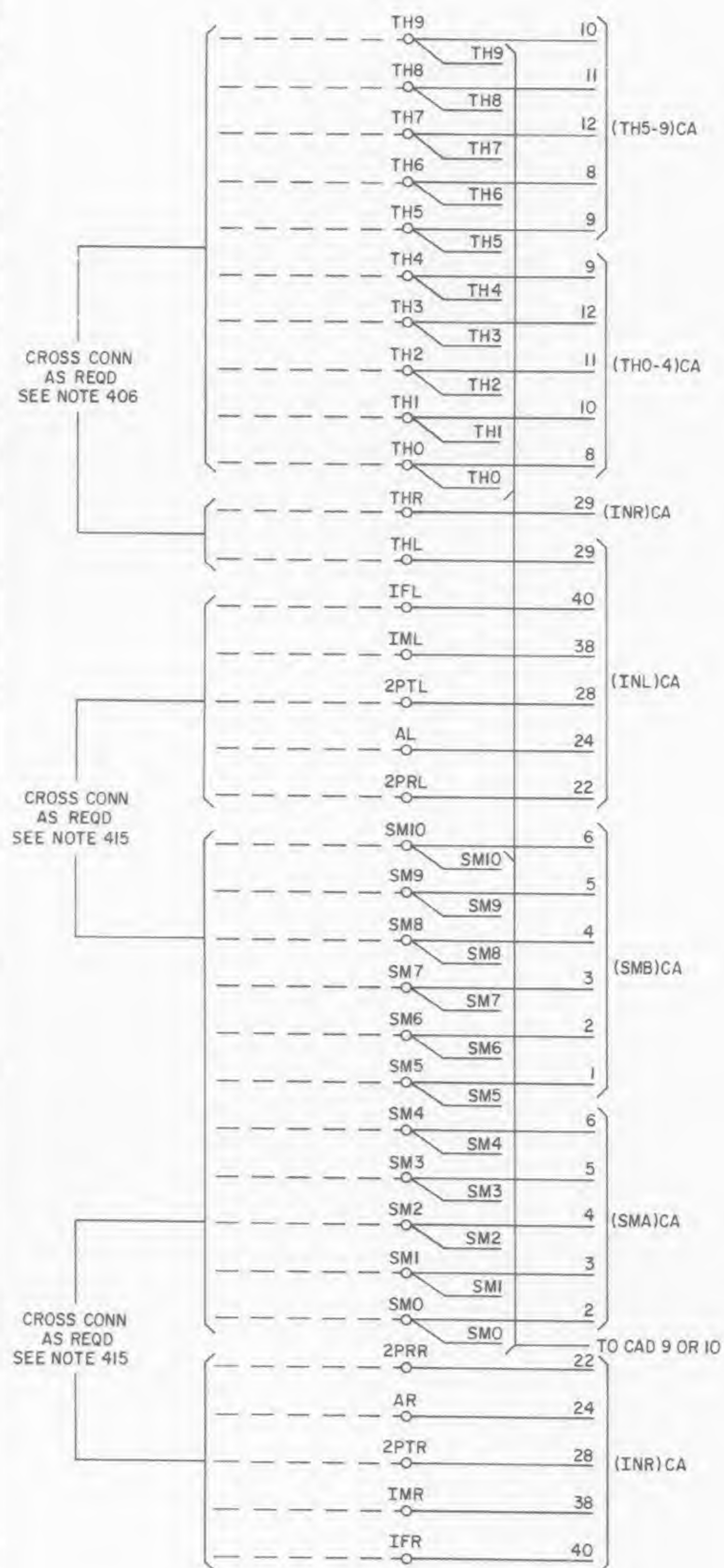
CAD 9 (FOR APP FIG. 8) FOR FIRST NUMBER NETWORK UNIT ON FRAME



CAD 10 (FOR APP FIG. 8) FOR INTERMEDIATE NUMBER NETWORK UNIT ON FRAME



⊗ CAD II
(FOR APP FIG. 8)
FOR LAST NUMBER NETWORK
UNIT ON FRAME



TS ON NUMBER NETWORK UNIT

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